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INDEX TO VOLUME 70



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INDEX TO VOLUME 70

JULY TO DECEMBER, 1936

This is an alphabetical index of articles and discussions arranged by leading words. It contains occasional cross references. Names of authors and men who discussed the papers are also included. Details of society proceedings, including the titles of papers

read, officers elected, etc., can be located in proceedings under Societies, Editorials, News of the State, Marriages, Deaths. The subjects of editorials also appear alphabetically and are marked (E).

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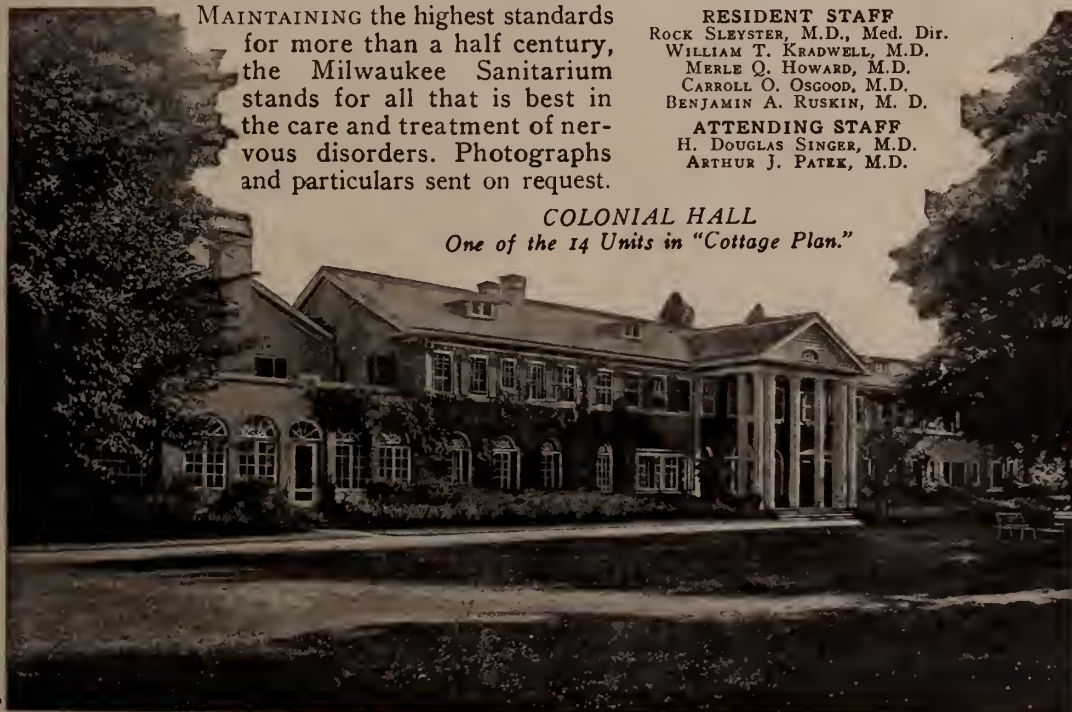
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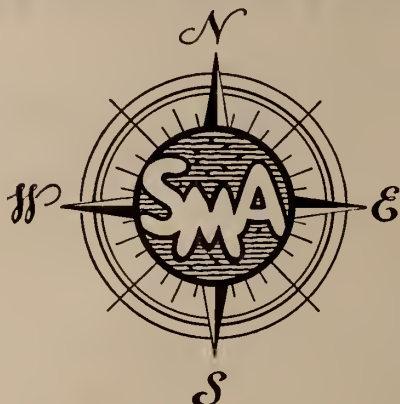
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CANNED FOODS AND THE PUBLIC HEALTH

V. FOOD IN THE OPEN CAN

• In September 1935, the facts about food in the open can were presented on this page. It was stated that there was no reason, from the standpoint of food poisoning, why food must be removed immediately after the can is opened. This statement bore the Seal of Acceptance of The Committee on Foods of the American Medical Association.

However, since that time, two incidents have occurred which lead us to present again the facts concerning food in the open can.

First, late last fall, a national organization dedicated to the relief of human distress during war and disaster, issued a list of precautions designed to reduce accidents in the home, in which it was erroneously recommended that food be removed from the can immediately. The Department of Agriculture detected this error and called it to the attention of those responsible for issuance of the recommendations. A correction was made as soon as possible but the damage had already been done. The original safety recommendations had meanwhile been issued in schools and newspapers throughout the country, thus giving further support to this old, unbiased prejudice against canned foods.

Second, in the early months of 1936, a release regarding food in the open can was

made by a national press service to newspapers throughout the land. The strong inference was made in this press release that food left in the open can might become hazardous to consumer health.

This dissemination of misinformation, referred to in the two instances cited above, has caused an increase in the number of consumer inquiries concerning the safety of food in the open can. To reply to these requests for reliable information, we can well quote from a recent release made by the Department of Agriculture (1).

(1) U.S.D.A. Press Release, Feb. 23, 1936

"It is just as safe to keep canned food in the can it comes in—if the can is cool and covered—as it is to empty the food into another container. Thousands of housewives are firm in the faith that canned goods ought to be emptied as soon as the can is opened, or at least before the remainder of the food goes into the refrigerator—one of the persistent food fallacies. The question keeps coming to the Bureau of Home Economics in letters from home-makers.

"A few acid foods may dissolve a little iron from the can, but this is not harmful, not dangerous to health. Cans and foods are sterilized in the 'processing'. But the dish into which the food might be emptied is far from sterile. In other words, it is likely to have on it bacteria that cause food to spoil.

"Whether in the original can or in another container, the principal precautions for keeping food are—Keep it cool and keep it covered."

AMERICAN CAN COMPANY

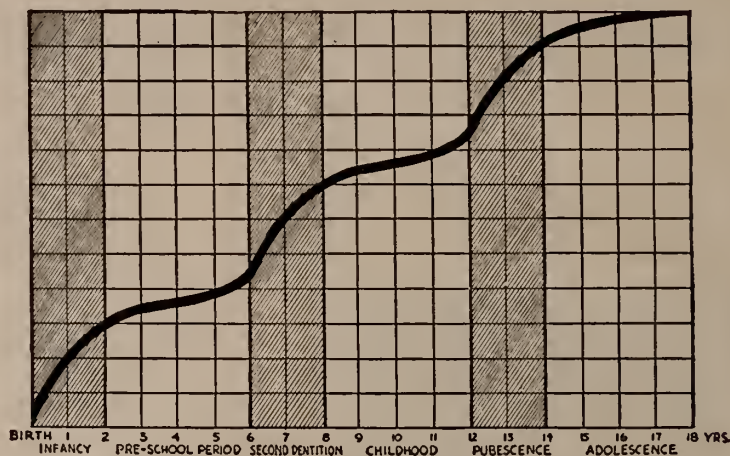
230 Park Avenue, New York City

This is the thirteenth in a series of monthly articles, which will summarize, for your convenience, the conclusions about canned foods which authorities in nutritional research have reached. We want to make this series valuable to you, and so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles.



The Seal of Acceptance denotes that the statements in this advertisement are acceptable to the Committee on Foods of the American Medical Association.

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CYCLES OF GROWTH FROM BIRTH TO MATURITY

The course of growth from birth to maturity is continuous but rhythmic. This span includes three cycles. The rapid growth in infancy is followed by the slow growth during the pre-school period; the rapid growth during the period of second dentition is followed by the slower growth during childhood; finally, the rapid growth during pubescence is followed by the slower growth during adolescence.

From Kugelmass' "Growing Superior Children", 1935. (Appleton-Century)

HOW MUCH should a child grow or gain from time to time? That is more significant than mere weight and height measurements. *To the parent* the mark on the wall and the reading on the scale reveal the child's growth. But *to the doctor* deviations from the periodic gains offer a sensitive index of dietary or disease disturbances.

The weight curve in infancy furnishes the most delicate index of progress. The birth weight doubles at five months and trebles at a year. Thereafter gains are slower; six pounds during the second year; five during the third; four during the fourth and fifth years. The trend of the first growth cycle is indicated in the chart.

This pattern of growth repeats itself during childhood and adolescence. Once the growth increments have been determined for a child, his assessment becomes individual and accurate.

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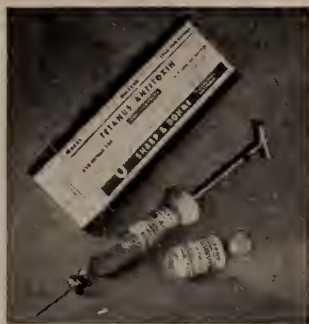
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ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF
THE ILLINOIS STATE MEDICAL SOCIETY

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Editorials

OUR INDIVIDUALISTIC PLAN OF PROFESSIONAL MEDICINE FURNISHES THE PEOPLE OF AMERICA THE HIGHEST HEALTH STANDARD

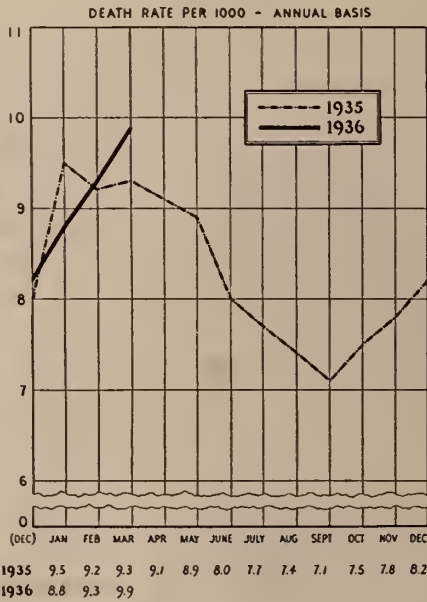
The Metropolitan Life Insurance Company handles a large proportion of the industrial insurance of the nation, purchased in majority holdings by that same class of citizenry that advocates of state medicine announce are literally dying like flies because of inadequate medical attention or poor medical service under the individualistic plan of professional medicine that through the decades has furnished the United States of America with the remarkably high health standard that has been and is, today, the envy of every other nation in the world.

Because of which the two appended tables published by this corporation are of great interest to any student of economics. It would not seem that the medical situation in the United States was in a state of decadence considering that the death rate for the United States per 100,000 persons was in a total covering all causes only 837.4 in 1934 as against 854.1 in 1934 or a difference of 16.7 in favor of a decreasing death rate for 1935. Although cancer is admittedly definitely on the increase all over the world, the death rate from this scourge, in all forms according to these tables, shows a decrease in the United States during 1935 over 1936 of 0.6% in the United States and a decrease of 0.4% in typhoid fever; 0.2% in measles, while scarlet fever was held at a level rate of 2.6% in both years. Tuberculosis in all forms was reduced 3.8% in 1935 and tuberculosis of the respiratory system fell from a rate of 52.2 in 1934 to a rate of 49.6 in 1935. Syphilis, locomotor ataxia and general paralysis of the insane were reduced 0.9% in 1935. Diarrhea and enteritis fell from 11.1 to 8.1%, and chronic nephritis a full 5%. Deaths from a puerperal state were reduced from 8.8% to 8.7% and accidental deaths 0.3% while automobile accidents despite safety cru-

sades throughout the country rose from 146.8% in 1934 to 150.8 in 1935.

DEATH RATES FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO. - INDUSTRIAL DEPT
WEEKLY PREMIUM-PAYING BUSINESS - TOTAL PERSONS



METROPOLITAN LIFE INSURANCE COMPANY PRESS
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METROPOLITAN LIFE INSURANCE COMPANY

Death Rates* per 100,000 for Principal Causes.
Weekly Premium-Paying Business in Industrial
Department. All Ages (Annual Basis).

Months of December, 1935; November, 1935, and
December, 1934

Causes of Death	Annual Rate per 100,000 Lives Exposed*				
	Dec., 1935	Nov., 1935	Dec., 1934	1935	1934
Total—All Causes	811.5	776.3	796.7	837.4	854.1
Typhoid fever	1.0	1.4	1.2	1.1	1.5
Measles .....	.9	.2	.7	2.5	2.7
Scarlet fever	1.6	1.8	2.6	2.6	2.6
Whooping cough	1.7	1.6	3.5	2.6	3.7
Diphtheria	3.2	3.6	3.4	2.2	2.1
Influenza	12.3	6.8	13.1	14.6	11.4
Tuberculosis (all forms)	50.0	45.6	48.5	55.6	59.4
Tuberculosis of respiratory system	45.3	40.3	43.8	49.6	52.2
Syphilis, locomotor ataxia, and general paralysis of the insane	10.4	10.5	11.3	11.4	12.3
Cancer (all forms)	89.1	90.4	88.9	95.5	96.1
Diabetes mellitus	23.8	21.0	24.1	24.2	24.4
Cerebral hemorrhage; apoplexy	61.6	60.8	63.9	61.2	63.2
Diseases of heart	153.6	144.8	149.9	157.4	162.9
Diseases of the coronary arteries and angina pectoris	33.8	31.9	31.2	31.9	28.8

Pneumonia (all forms) ..	68.0	52.7	63.5	66.1	65.0
Diarrhea and enteritis ..	5.4	7.8	5.3	8.1	11.1
Appendicitis	10.0	7.8	10.7	11.4	13.1
Chronic nephritis (Bright's disease) ..	56.4	53.3	54.9	59.9	64.9
Puerperal state—Total ..	7.3	6.6	7.4	8.7	8.8
Suicides	7.1	6.2	8.7	9.1	9.5
Homicides	5.9	4.9	6.1	5.9	5.9
Accidents—Total	52.7	52.1	55.1	54.5	57.8
Automobile accidents ..	22.0	23.5	23.1	20.3	21.1
All other diseases and conditions	155.6	164.5	142.7	150.8	146.8

*The rates for 1935 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes pericarditis, acute endocarditis, and acute myocarditis.

Quoting directly from the "Statistical Bulletin" of this life insurance company, under date of January, 1936, note this paragraph:

"Never before has the health record of the industrial populations of the United States and Canada equaled that of 1935, when the death rate among approximately 17,000,000 industrial policy holders of the Metropolitan Life Insurance Company was at the lowest point of all time, namely 8.4 per 1,000. The best previous figure was that for 1934 when a death rate of 8.5 per 1,000 was recorded."

And to continue:

"The low death rate in the wage-earning population, not only for 1935 but during all six of the depression years 1930 to 1935, has been truly remarkable in view of the difficult economic conditions which prevailed during this period. Obviously, large scale unemployment is not conducive to low death rates. The fact remains, nevertheless, that the average death rate among the insured American and Canadian families since the beginning of the depression was only 8.6 per 1,000, whereas in the six years 1924 to 1929, a period marking the peak of prosperity, the average was 9.2, or nearly 7% higher.

"It cannot be determined at this writing whether the mortality rate for the general population of the United States in 1935 was lower than that for 1934. Data from 17 States, covering fractional parts of the year, point to an improvement. Incomplete reports showed declines in nine States (Illinois, Indiana, Louisiana, Michigan, Minnesota, New Jersey, New York, Pennsylvania and South Dakota), an area comprising 39% of the population of the country; and increases in only five States (Arizona, Connecticut, Kansas, Maryland and Tennessee) which include only 7% of the population. In three States, Ohio, Rhode Island and Wisconsin,

there was no change. The reports of the Bureau of the Census for 86 large cities show substantially no change up to December 28 of last year. These cities comprise 29% of the population of continental United States. But whatever the final figures for 1935 may show, it is fairly well assured that the 1935 death rate in the total population of the United States was *not* a new minimal figure; for it is the year 1933, with a mortality rate of only 10.7 per 1,000 which ranks as the record health year in the population at large. It is assured, nevertheless, that last year's death rate for the country at large was one of the lowest ever recorded."

THE EFFECTS OF TOBACCO UPON MEN AND WOMEN

Increased indulgence in tobacco, as evidenced by consumption of cigarettes has brought forth much serious study as to the effects of this habit upon American men and women.

Doctors, many of whom are not free themselves from the tobacco habit, are as interested as any one can be, if not more so, in the exact truth about cigarettes. Recently there has been widely demonstrated an apparatus to extract the combustion products from cigarette smoke, to elucidate whether this smoke is or is not an irritant to the mucous membranes.

This apparatus employs a mechanical puffer to simulate the act of smoking. Intermittently the smoke is drawn through some such indifferent substance as water, normal salt solution or mineral oil. The amount and duration of inflammation and edema produced by such an irritant in the conjunctival sac of a rabbit affords an accurate index of the offending substances present in the installations, it has been observed. Observations to this end have been published by numerous commentators, among whom may be mentioned, Mulinos, Osborne and Flinn in the *Proceedings of the Society for Experimental Biology and Medicine*, *The Laryngoscope* and in the *New York State Journal of Medicine*. Especially does Flinn discuss observations upon a group of one hundred heavy smokers who had symptoms alleged to be due to the irritation of tobacco smoke. Eliminating psychologic and other human attributes the results were the same with humans as with animals and led to the findings that despite the effort of manufac-

turers efforts to halt irritation by treatment of tobacco with such hygroscopic agents as glycerine and diethylene glycol the irritation maintains and that that resulting from the combustion of glycerine products was greater than that from products of diethylene glycol.

All inhaled tobacco smoke contains potential irritants such as nicotine, carbon monoxide, aldehydes, furbural, acrolein and formic acid, and the reaction of all such smoke is acid while complicated also from variations of cigarette ingredients and the quantity, rapidity and manner of smoking.

Summary of their observations as set forth by Mulinos and Osborne (*N. Y. State Journal of Medicine*, June 1, 1935) merits quotation:

"Cigarettes identical in every other respect vary in irritating properties of their smoke according to the type of hygroscopic agent used. Cigarettes in which glycerine is used are more irritating than when no hygroscopic agent is employed while those made with diethylene glycol are definitely less irritating. Our results now show that, regardless of the blend of tobacco, flavoring materials or method of manufacture, the irritation produced when glycerine is used as the agent is substantially the same—and greater than that caused by diethylene glycol.

Although these results apply only to our method of smoking the cigarettes and to aqueous or oily solutions of the smoke, and although the irritation is measured upon the conjunctival mucous membrane of rabbits the investigations of Flinn (*Laryngoscope*, 45: 149, 1935) indicate that the same relative irritation produced by those hygroscopic agents holds also for the human cigarette smoker."

SOME SIGNS POINT THAT THOSE "EYES THAT WILL NOT SEE" MAY OPEN EVENTUALLY

That the hands that feed the great foundations—misguidedly called "philanthropic"—may some day signal in other directions is the thought evoked by perusal of the following letter which is self-explanatory.

Until that day does arrive however it is a fundamental duty of ethical, organized medicine to continue to point out danger to public health and welfare through medicine as practiced or controlled by the laity when vested in medical

supervision or practice in the name of the great foundations, and all the incidentals such as free or part pay clinics, or hospitals practicing medicine, or the advocacy of communistically inspired schemes for so-called "health insurance" or state medicine.

MILBANK MEMORIAL FUND

40 Wall Street

New York

February 5, 1935.

Dr. Frederick E. Elliott,
Chairman, Committee on Economics,
Medical Society of the State of New York,
122 76th Street,
Brooklyn, New York.
Dear Dr. Elliott:

In response to your suggestion that I make a very brief statement of the position of the Milbank Memorial Fund in reference to health insurance, which was more fully discussed in my recent address in Indianapolis, I would say that the Directors of the Fund have taken no action of any kind in relation to this subject.

In reply to your specific inquiry I would further say that I do not intend to recommend to our Directors the granting of any financial support toward furthering state or federal legislation on this subject. No suggestion that the fund should make such a grant has come from any source and if such a suggestion should be made, I have every reason to believe that it would not be favorably acted upon.

I am, yours sincerely,

Albert G. Milbank.

MARSHALL FIELD ANNEX BUILDING PROVIDES SPACE FOR HEALTH EXHIBIT

"Good Health and How to Keep It" will greet the thousands of people who pass each week through the lobby of The Marshall Field and Company Annex Building, one of Chicago's largest loop office buildings.

The manager of this building, Mr. W. W. Branch, sent the following communication to the Educational Committee of the Illinois State Medical Society:

"We wish to present to the medical profession through your Committee a matter of health education which we hope will receive your consideration.

"We propose to furnish free of rental and service charges one display window in the first floor Washington Street corridor of The Marshall Field & Company Annex Building, for the use of the Chicago Medical Society in presenting a display of educational value to the layman. It is understood that all cost in preparing the material for such display will be borne by the Chicago Medical Society.

"It seems evident that such a display properly presented will be of great public interest and will have a beneficial effect on the tenants of the Annex Building who are your members, as well as the medical profession as a whole. The display can very definitely have a splendid psychological effect on the layman relative to the work of the medical society and the general progress of medicine.

"It is our sincere hope that you will consider our proposal of value and we can assure you of our full cooperation in making such an educational program a success."

The Council of the Chicago Medical Society and the Educational Committee were eager and delighted to accept this splendid offer and immediately made arrangements to present an exhibit on "Eye Injuries" relating particularly to Fourth of July accidents.

Through the courtesy of Doctors Thomas D. Allen and G. W. Nethercut, a display was prepared and placed on exhibit June 18th and will continue until after the Fourth of July. A new exhibit will be presented about the 11th of the month.

The exhibits will be changed every few weeks in order to present as many health subjects as possible and to keep the public interested and watching this window.

The Medical Society appreciates this opportunity so generously given by Marshall Field & Company through Mr. Branch, and these exhibits, appealing to the eye will greatly strengthen and enhance the health educational work being carried on in Chicago and down state through the radio, public addresses and the newspaper column.

NAMED

Applicant for Room (in college town): "What are your terms for students?"

Landlady: "Bums, loafers, dead cats, dead beats, no-goods and all-around good-for-nothings."

MEDICAL ECONOMICS

Frank L. Brown, M. D.
E. P. Coleman, M. D.
John R. Neal, M. D.
Ralph Peairs, M. D.
P. H. Kreuscher, M. D.
C. E. Wilkinson, M. D.

Edited by the Committee on Medical Economics
of the
Illinois State Medical Society
E. S. Hamilton, M. D., Chairman
Kankakee, Illinois

H. M. Camp, M. D.
R. L. Green, M. D.
I. H. Neece
R. K. Packard, M. D.
C. B. Reed, M. D.
C. S. Skaggs, M. D.

Address all letters and communications to the Chairman.

As those of you who have noted the new heading of the column know, there has been several changes in the personnel of this Committee for the ensuing year. It is with regret that some of the members in past years were permitted to resign, due to causes which seemed in each instance to be sufficient. Their places have been taken by men from all parts of the state, and as a result there will be no difficulty in contacting a man on this committee by any member of the state society, who so desires. We will make every effort to cooperate with both individual members and component county societies, this year as in the past.

Some time in the near future the Committee will be called together to outline the work of the coming year, and we will be glad to hear from any member of the state society who has an idea as to the nature of the work we should stress. Kindly contact either the man on the Committee with whom you are best acquainted or write to the Chairman, outlining your plan and you may be assured that it will receive due consideration.

One of the questions on which the Council is asking the opinion of the County Societies is that of the Secretaries Conference. This has been held on the first day of the annual meeting for the past several years, with changing interest and attendance. This is and should be one of the best and most important conferences of the entire annual meeting. Unfortunately it has had so much competition from other programs held at the same time and has always been scheduled too early to get full attendance. This has resulted in poor attendance at times. In an effort to correct these faults, the Council is considering changing either the time or the hours of this meeting. Many suggestions have been made such as holding the Conference on Monday afternoon, and having no other programs at the same time. Both of these suggestions are open to criticism. Several other state medical socie-

ties have had this same problem and in their efforts to solve the same have held a special meeting of the officers of the county societies during the winter months, either in November or January. At these meetings all the officers of the component county societies as well as interested other members are invited. Part of the program is given over to the special problems of the county societies, such as membership, programs, records and publicity. The remainder of the programs are given to educational subjects similar to those now discussed at the annual meeting of the Secretaries Conference. This latter plan has many good points in its favor and the officers of your local county society has or will receive in the very near future a questionnaire from Dr. H. M. Camp, Secretary of the Illinois State Medical Society, asking their opinion on the subject. Undoubtedly, they will appreciate your interest in the subject and will be guided in their answers to the same, by your opinions. So contact them and talk over the plan with them, for the Council wishes to make the proper decision.

The question of Group Hospitalization continues to increase in interest in Chicago, where there is a beginning of a comprehensive plan to include most of the hospitals of the city. The latest report is that the cost will be \$10.00 per year. From the best available sources it appears that there are still many details to be worked out and that the basic requirements of any such plan as outlined by a special Committee of the Illinois State Medical Society in January, 1935, and reported at the annual meeting in the same year are not being followed. A special committee of the Chicago Medical Society, under the chairmanship of A. A. Hayden, has recently reported to the society with the following recommendation:

"Therefore, before studying further the plan proposed by the Chicago Hospital Council, this committee recommends that the Chicago Medical Society secure contracts so drawn that the Chi-

cago Hospital Council and its member hospitals shall be so pledged as to:

1. Preclude the possibility of hospitals practicing medicine and/or exploiting the services of physicians.

2. Prevent underbidding among hospitals.

3. Recognize as the basis for hospital membership, the A. M. A. and A. C. S. standards with such individual modifications as the C. M. S. may from time to time officially approve.

4. Exclude no Chicago hospital except for reasons set forth in 3.

5. Refer all matters of medical administration and medical policy to the C. M. S., whose decision in these instances shall be final and binding both on the C. M. C. and its member hospitals.

6. Keep records of admission and assignment of patients as the C. M. S. may require, open for inspection by the C. M. S.'s properly designated officials.

The Committee presents the foregoing as a report of progress in what may become a most important matter to every doctor; indeed, to every citizen of Chicago.

Evidently the Chicago Medical Society is watching the experiment closely and trying to safeguard the best interests of the medical profession. Surely, the rest of the state will watch the success or failure of the plan in Chicago and we will watch the further reports of this committee.

For the past several months this column has talked about the impending changes in the administration of relief after July 1, 1936. These changes have occurred exactly as expected. It is to be hoped that every county society has been sufficiently alert and on the job so that there will be no delay in getting the proper authorities, the township supervisors, to assume their lawful responsibilities in regard to paying for medical services to the poor. There will no longer be any distinction between the indigent and the unemployed. All have become the responsibility of the Supervisor. It is unfortunate, if in the great game of passing the buck, the townships are short of funds. This is not a new condition for the townships' officers and should not serve as an excuse for the medical profession working for nothing. Grocers, coal dealers and other merchants will be paid or no goods will be delivered. If the Township Super-

visor can find funds for these necessities of life surely he can find funds to pay for medical care which has to do with life itself. We as medical men have too long been swayed by appeals to our charity and kind heart, and allowed politicians and office holders to get away with many things which we knew were wrong. It is time that we assumed a saner and more militant attitude and let them know that we no longer will be easy marks for their honeyed words and promises. This is a problem for every county medical society and one that the state society cannot do for you.

The manner in which you solve the problem is up to you, but solve it at once if you have not already done so.

The following article is the Address of the late Chairman of the Council, Dr. I. H. Neece, at the time of the presentation of the President's Certificate to the retiring President, Dr. Reed, at the annual meeting last May. It is a scholarly address and contains much that will be very stimulating to the readers as it was to those who were able to hear it. So read it over and carry some of its suggestions into your life.

E. S. Hamilton, *Chairman*.

PRESENTING THE PRESIDENT'S CERTIFICATE

Mr. Toastmaster, Fellow Practitioners, and Guests:

I am mighty proud of this organization. I wish I were capable of rendering to you a toast worthy of your importance and honor. But you will kindly accept my good intentions. I might fail like the Military Officers I recently read about.

A company of soldiers gave a dinner for two visitors at camp, members of a famous Canadian regiment, who were home on leave. The sergeant had been carefully coached about giving the toast, but became flustered, and this is what he made of it: "Here's to the gallant Eighth, last on the field and the first to leave it." Silence reigned, then the corporal came gallantly to the rescue. "Gentlemen," he began, "you must excuse the sergeant; he never could give a toast decently; he isn't used to public speaking. Now, I'll give a toast: Here's to the gallant Eighth; equal to none."

Doctors of Illinois: I congratulate you most heartily. We are regularly enlisted in a heroic

army which is giving ceaseless and magnificent battle on behalf of suffering humanity. Your cause is a noble one. If it were possible to picture in one vast panorama all the deeds of a single day of those who devote their lives to fighting disease, mankind would, I believe, be thrilled by an emotion far more enduring than that which responds to the battle of destruction. And to the thoughtful mind how much more impressive—how infinitely more grand in all the elements of true grandeur—is the silent and sleepless contest to save human life, than the mad and cruel struggle to destroy it. Be not discouraged that your coming and going shall not be heralded by the blare of trumpets or the booming of cannon. Deep in the heart of the world there is growing a profound reverence for the thing you are doing.

So, were it mine to write the guiding maxim of your lives it would read: "In the service of Humanity, eternal Vigilance and Patience without end."

I take off my hat to the specialist, the aristocrat of our profession. I bow with reverent knee to its intrepid hero, the general practitioner.

It is this frequent coming together of scores of earnest men, each with his individual experiences but all with a single engrossing purpose, which keeps science abreast of the times and ever ready for the next forward step.

Doctors in the United States have had tough sledding. The depression is only one of our troubles. Among our other trials we find: Free clinic service has quadrupled in a decade; medical men now treat gratis 500,000 of the nation's daily sick list of 1,250,000. Pay clinics have had a recent mushroom growth. They were designed for downtrodden white-collar workers and to operate on a system of small fees. Doctors must give their services free while other employees are paid.

Competitors have been chiseling fat slices from the national medical dollars: Osteopathy, \$42,000,000 a year; Chiropractics, \$63,000,000, and living for 3,000 naturopaths and 10,000 Christian Science practitioners.

Our State Legislature should protect the "Old Guard." The M. Ds. deserve the credit for the wonderful progress we have made in "Preventive Medicine" during the past fifty years.

We are contending with cults whose merits

and virtues little if any excel those of the fakers of ancient times.

I am told that now highway filling stations are being recommended as first aid emergency stations.

In spite of shrinking incomes among its members the system of private practice is threatened. Socialization of medicine, which might insure practitioners bread and butter in the form of salaries would undermine medical ethics.

Dr. Charles B. Reed is to be commended for bringing into the open the tactics of the opponents of organized medicine. Too long has the profession been the target for everyone who had a hobby to ride, a theory to propagate, or a reform to endorse.

Medicine is an individual walk of life—patient and doctor—and must be free. Socialized medicine means that the doctor is no longer a free man, but at the beck and call of politicians. If medicine becomes commercialized it will be largely because of bad ethics within the profession.

Preserve us from the day wherein the state directs the thoughts and commands the actions in all activities of all its citizens. Provide a hospital for the needy, but allow each patient the opportunity of choosing another hospital if through self-denial or ability he has sufficient means to command its services. Let him accept in adversity the administrations of the state physician, but grant him the freedom of paying the physician of his choice in prosperity.

Dr. Morris Fishbein has written "A Doctor's Litany," which I appreciate:

"From osteoquacks and chiroquackers; new thoughtists and throsophists; Eddyists and phrenologists; naprapaths and spondylatherapists, and from over-enthusiastic psychoanalysts, Good Lord, deliver us.

"From patients who are credulous cranks and hysterics; from women who want what we can not do; from spoiled children and from all forms of malignancy, carcinomatous and otherwise, Good Lord, deliver us.

"From compulsory health insurance; from interference with legitimate medical practice: demagogues who would be apostles; physicians who treat narcotic addiction by prescribing narcotics; laymen who know more about medicine than do physicians, and from politicians with platforms, Good Lord, deliver us.

"From home-made hooch with no kick or four feet all at once; anti-vivisectionists, anti-vaccinationists and all other antis who have endowed their causes with the virtues of a religious cult; book agents with 'Histories of the World War' or self-laudatory biographies; people who go around with chips on their shoulders and those who go around looking for chips, Good Lord, deliver us."

In every generation there are a few men who because of their outstanding attributes have won the respect and love of their fellow men. It is these men who raise the average of humanity and by their words and deeds brighten the world about them. Such a man is our distinguished retiring president, Dr. Charles B. Reed. We are all familiar with his achievements and we know how the medical profession has been and is benefited through his faithfulness. Our lives are richer and fuller because he lives.

A public office is an extremely difficult place to fill, but when a man presents to an office executive ability, keen judgment, and an ability to win friends, he should receive our whole-hearted commendation. We feel that you, Dr. Reed, possess all these qualities and that your retirement leaves a vacancy which will be difficult to fill.

It is superfluous for me to tell you how proud this association is to honor you on this occasion.

A very pleasant duty has been assigned me, that of expressing hearty appreciation of valued services rendered. I cannot tell you how delighted I am to be the means of conveying the expression of our united interest in the welfare of Dr. Reed, our retiring president. What we offer here is but a poor symbol of our feelings, Doctor, but we know that it will be received kindly, as a simple indication of the attachment which each one of us cherishes for you in our heart of hearts.

The fittest to survive are not the fleetest, nor the strongest, but those who, impelled by altruistic motives render the greatest service to their fellows.

Life can be lived profitably, or it can be lived so that neither the individual who lives it nor those who come in touch with that life will get any benefit out of it. Life is a valuable possession and it should be used in being a blessing to others.

My friends, Dr. Reed has taught us if we want to be honored by our fellow-traveler on the highway of life, we must give ourselves to them in loving, cheerful service and then all glory worth while will be added unto you.

The prosperity of a country depends not upon the abundance of its revenues, nor on the strength of its fortifications, nor on the beauty of its public buildings; but it consists in the number of its cultivated citizens, in its men of education, enlightenment and character. Here are to be found its true interest, its chief strength, its real power.

Dr. Reed, your name, your deeds, will be as legible on the hearts you leave behind, as the stars on the brow of the evening. Your good deeds will shine as the stars of heaven!

I. H. NEECE, M. D.

Correspondence

NEW THOUGHT IN THE CONDUCT OF THE SCIENTIFIC PROGRAM OF THE STATE MEETING

Chicago, Ill., June 6, 1936.

To the Editor:

The annual meetings of the Illinois State Medical Society grow in interest and importance to both the medical profession and the public. The duties of the program committees of the various sections increase in number and become more complicated. Anyone who has not had the experience of making up scientific programs has no conception of the length of time consumed and the amount of labor and anxiety the work entails.

No one realizes better than the program committees the overloading of our annual programs. The state meeting programs make one think of the show windows of the 5 and 10.

The older men in the society, animated by the desire to give the profession the results of years of experience, and urged by the fear of being relegated to oblivion, are anxious to appear as often as fairness to others will permit.

The younger men, lacking clinical experience, turn eagerly to the laboratory with the hope of making new and startling discoveries that will prove of benefit to clinical medicine. The impatience of youth sometimes prevents them from continuing their labors until experience and time

have made it possible for them to distinguish between the trivial and the important. That is human nature and is the spirit very necessary to the welfare of man. Both of these groups furnish problems that harass the program committees.

The human mind, even though well trained, is capable in a given time, of assimilating only a limited amount of the intellectual feast placed before it. At the meeting in Springfield, including the oration in medicine, on the first afternoon of the program of the section in that department, eight papers and fifteen speakers were presented between the hours of 1:30 P. M. and 5:00 P. M. That is too much to expect any audience to endure.

The annual meeting of any scientific organization, if it is to accomplish the most for all concerned, must offer programs of variety in which may be found periods of intense concentration and periods of relaxation. To overload the program is unjust to the speakers and unfair to the audience.

The scientific exhibits are increasing in number, attracting more attention from the attending physicians and deserve an allotted time for examination and study. These exhibits should be given more space and more light. Seating arrangements before each exhibit should be provided. The commercial exhibits stimulate interest, forecast the broadening field of medicine and supply an element of hospitality that adds much to the general success of the annual meetings.

Physicians are prompted to attend the annual meetings by the desire for self-improvement, fellowship, business of the organization and recreation. In earlier times the reading of and discussion of papers was the only scientific business of the meeting. Only a few men wrote papers. Now we are confronted with the problem of too many papers for the time available. This problem can be partially solved by having most of the papers read by title. The Society can afford to publish biennially a plain book of transactions containing the unread papers. A large number of physicians have never learned the value of reading the old and discovering much that is still law and gospel. To further expedite matters and add to the scientific interest in the meetings, the following changes are suggested:

1. Begin at 8 o'clock in the morning, each

speaker to have 30 minutes. The speaker appointed to open the discussion to be limited to five minutes. General discussion and questions limited to 3 minutes for each speaker. Short general discussions should be encouraged. The essayist can easily close the discussion in 3 minutes.

2. The president's dinner, the stag and alumni dinners to be held at noon. The older boys will sleep better if they eat their heavy meal at noon.

3. One paper in the afternoon. This session to begin at 2:30 and close at 3:15. After this, the afternoons can be devoted entirely to the scientific and commercial exhibits.

4. Evening sessions from 8 to 10:30. Lantern slides are much better shown at night. Two papers with questions and discussions can be presented in that time. These evening sessions could present one program that would be suitable for the doctors' wives and the public.

5. Abolish the orations in medicine and surgery. They are no longer orations but scientific papers that differ from the rest of the speaking program only in time consumed.

6. Members of the various program committees should refrain from putting themselves on the program.

Seven branches of medicine are represented at the State Meetings: Medicine; Pediatrics; Obstetrics and Gynecology; Surgery; Eye, ear, nose and throat; Radiology, and Public Health. Eighty-nine papers were read from Tuesday morning until Thursday noon.

The suggested changes would provide for the reading of twenty-four papers. The greatest number of speakers of any session would appear in the morning when the audiences are most alert and able to profit from what is offered.

EMMET KEATING, M. D.

2800 Milwaukee Ave.

HAVE YOU READ PHYSICIANS AND THE PHARISEES?

Evanston, Illinois, June 12, 1936.

To the Editor: It would seem a great pity to me that such articles as that by Dr. Charles B. Reed, entitled "Physicians and Pharisees," in the last number of the ILLINOIS MEDICAL JOURNAL cannot be broadcast or distributed in some way so as to reach every member of the Medical profession.

There must be thousands of physicians, scat-

tered over this broad land, who probably see and read very little of that kind of literature, but they all have a vote.

I am wondering if any effort is being made by the organized medical societies to reach every physician, however remote and isolated he may be, with factual information as to what is being done under the guise of Social Security to completely destroy the practice of medicine as we know it here in this country?

I shall be pleased indeed to have any information you can give me in the matter, and also any suggestions which you might make as to what a lone individual like myself could do to help the good cause along.

John Lincoln Porter.

636 Church St.

PARENTS AND TEACHERS ASSOCIATION APPRECIATES COOPERATION

Aurora, Illinois, June 13, 1936.

To Dr. R. R. Ferguson, Chairman of Educational Committee:

First of all, may I thank you and the Illinois State Medical Society for the fine cooperation we have had this past year. Also for all the help received. Miss McArthur and her assistant at the Chicago office have been of untold help to me, and I have just realized this past week that I should have written a letter to your Society before your State Convention mentioning this fact. I surely did not mean to seem unappreciative, but it is just the many duties and the added work that sometimes seems to be the big thing, and we forget to remember that if it were not for the cooperation of just such organizations as yours that we could not function as efficiently.

While it does not appear to me that I have accomplished much, still I feel that our lay people are becoming more health conscious, and that we should be thinking in terms of a larger and an organized health program. What this may be, I cannot say, but I have that feeling, and am hoping that sometimes soon I may have time to have a conference with you and talk over a few questions I have in my mind.

If it is possible, would very much like to have you serve as Consultant to my Health Committee this year also. At our last Convention, the name of the Committee was changed from Child

Hygiene to Health. More interest seems to be taken with the health question of the adolescent and many high school chairmen resented the name of Child Hygiene, therefore the change.

Again thanking you and the Medical Society for the cooperation I have received,

Respectfully,

ILLINOIS CONGRESS OF PARENTS AND TEACHERS.

MRS. V. L. BOWMAN,

6th Vice-President in Charge of Health.

LIBRARY FACILITIES AT RAVENSWOOD HOSPITAL

The Ravenswood Hospital Medical Library, by its recent festivities celebrating the opening of its new reading room, has marked another forward step in its progress. The room was formally opened on June 24, 1936, with a brief program and reception to which doctors and members of the community were invited. Dr. Malcolm T. MacEachern, Associate Director of the American College of Surgeons, the principal speaker of the occasion, talked on the advantages of a medical library and praised the library and the staff which had conceived and developed it. Dr. Roland L. Green, President of the Illinois State Medical Society, who had driven in from Peoria for the occasion, said a few words of congratulation. On the following Saturday the librarians entertained the medical and record librarians of Chicago and vicinity at a tea in honor of the occasion.

The reading room thus dedicated in the culmination of eight years of growth and activity of the Medical Library. Starting in a wing of the solarium of the hospital, occupied jointly with the record department with which it correlates closely, the library soon outgrew its allotted space. Both departments were crowded to the point where their efficiency was greatly impaired. Auxiliary quarters outside the hospital were furnished but were not satisfactory. Finally the medical staff, which had taken over the library originally financed by a number of its members, voted to finance the building and equipping of an addition, to be used as a reading room, the original space to serve as office and filing room for the library and record departments.

These two departments, then, will maintain their close relationship, which has made it possible to study the records of the hospital together

with reference books and current literature. The study of groups of cases as well as individual case reports and the preparation of papers for presentation at staff and medical society meetings is thus encouraged. The library contains some twenty-five hundred to three thousand volumes and a file of about one hundred monthly journals, many of them contributed by our friends. It also has the privilege of borrowing books and other material from the larger libraries of the city and country. Now with enlarged and more comfortable space for reading provided, the doctors of the community will be able to utilize its facilities to the utmost.

A cordial welcome is extended to doctors of the city and state to visit the library at their convenience.

MARGUERITE SIMMONS,
Medical Librarian.

IN RE MEDICAL CHARITY

May 5, 1936.

To The Editor:

Your very provocative editorial on dispensary service in the *ILLINOIS MEDICAL JOURNAL* of February, 1936, impels me to make the following observation, which you may use, preferably without my name:

Some Observation on Medical Charity:

Taxpayers and philanthropists give most of the money,

Politicians and welfarers get most of the money;

Medical men give most of the free service.

Philanthropists and welfarers get most of the glory.

EDWARD H. OCHSNER.

AMERICAN CONGRESS OF PHYSICAL THERAPY

Fifteenth Annual Session

Announcement is made of the 15th annual clinical and scientific session of the American Congress of Physical Therapy, September 7, 8, 9, 10 and 11, at The Waldorf-Astoria, New York City. The program includes many special features: Sectional meetings in the specialties, symposia on short wave diathermy, hydrotherapy, exercise and electroresection. Fever therapy and the treatment of vascular diseases occupy an important place and will be discussed by prominent workers in the field. The educational aspects of physical therapy and the relationship of physical therapy technicians to physicians and hospital departments will be thoroughly dealt with. Other features include technical and scientific exhibits

and a full day of hospital clinics where technic will be adequately demonstrated.

Physicians, their technical assistants, and nurses working in institutional departments of physical therapy are urged to attend this important session. It undoubtedly will be one of the outstanding medical gatherings of the year. There will be no registration fee.

TO HONOR DR. E. P. LYON

At the close of the present academic year, Dr. E. P. Lyon, Dean of the Medical School, retires from active service at the University of Minnesota. During his administration, covering a period of twenty-three years, the Medical School has exhibited steady and continued growth. As a fitting tribute to his stimulating leadership, the alumni and faculty of the Medical School propose to establish in his honor the Elias Potter Lyon Medical Lectureship at the University of Minnesota. The fund for this purpose is to be raised through subscriptions by alumni, faculty, students, and friends. Contributions to the Lyon Lectureship fund may be sent to Mr. William T. Middlebrook, Comptroller, University of Minnesota, Minneapolis.

CHILDREN ARE BECOMING FEWER IN UNITED STATES POPULATION

Readjustments in the medical field and in hospital organization in keeping with the United States population trend, is foreseen by John Glossinger, Vice-President of the Kny-Scheerer Corporation.

Children are becoming fewer in the United States population, Mr. Glossinger said. Whereas in 1920 children under five years of age comprised 10.9 per cent of the total population, by 1930 this age group formed only 9.3 per cent of the whole. This is all the more striking, he said, in that during the same decade the total population increased 16.1 per cent.

Mr. Glossinger also cited these additional interesting Census Bureau figures about the size of American families. In 1930 there were in the United States 23,352,990 intact marriages, that is, marriages untouched by death or divorce. The largest category—almost a third of all—was the group of 7,447,328 families who are childless. One-child families numbered 5,254,863; families with two children, 4,246,459; those with three children, 2,650,730; and those with four or more children, 3,753,610. There were fewer children in city families than in rural families.

MORE SPECIALISTS

New Hospital Patient—"Say, doctor, I asked that nurse to put a hot water bottle at my feet and **she stuck** up her nose and walked away."

Doctor—"What else could you expect? That was the head nurse."

Patient—"Oh, do they specialize that much? Then get me the foot nurse."

Caller—"What's all that howling upstairs?"

Mrs. Boardem—"It's that faith-cure doctor who's got the toothache."

ILLINOIS STATE MEDICAL SOCIETY PROCEEDINGS OF THE HOUSE OF DELEGATES

Springfield, May 19-21, 1936

The first session of the House of Delegates of the Illinois State Medical Society was held at the Knights of Columbus Building, Springfield, Tuesday, May 19, 1936.

The meeting was called to order at 3:40 P. M. by the President, Dr. Charles B. Reed, Chicago.

The first order of business was the report of the Committee on Credentials.

Dr. E. P. Coleman, Canton, reported that the Committee had certified 112 delegates; 59 from down state, 39 from Chicago Medical Society, and 14 members of the Council.

Dr. J. S. Nagel, Chicago, moved that the report of the Credentials Committee be accepted. (Motion seconded by Dr. Mather Pfeifferberger, Alton, and carried).

Dr. Charles H. Phifer, Chicago, moved that these delegates constitute the House of Delegates. (Motion seconded by Dr. E. S. Hamilton, Kankakee, and carried).

The next order of business was the roll call by the Secretary.

The secretary announced that all delegates had been certified on the attendance slips.

Dr. Mather Pfeifferberger, Alton, moved that the calling of the roll be dispensed with, and that the attendance slips constitute the official roll call. (Motion seconded by Dr. Robert Hayes, Chicago, and carried).

The next order of business was the reading of the minutes of the last annual meeting.

Dr. Guy M. Cushing, Chicago, moved that the minutes as published in the July, 1935, issue of the ILLINOIS MEDICAL JOURNAL be accepted as the official minutes. (Motion seconded by Dr. J. S. Templeton, Pinckneyville, and carried).

The President: At this time it might be gracious since we have lost during the past year three ex-presidents and several other workers, to rise for one-half minute. (This was done.)

The President: At the last meeting of the House of Delegates it was decided that hereafter there would be appointed reference committees who would consider the various reports of officers and committees and report at the last meeting of the House of Delegates on Thursday morning. Accordingly, the following committees have been appointed:

1. Committee on Reports of Officers (President, Secretary, Treasurer, and Chairman of the Council): Drs. G. Henry Mundt, Chairman, E. E. Davis, G. W. Post, Tom Kirkwood, and C. C. Guy.

2. Committee on Reports of Councilors: Drs. Mather Pfeifferberger, Chairman, C. O. Burgess, J. J. Gill, Guy M. Cushing, and John M. Hayes.

3. Reports of Standing Committees (Public Relations, Legislative, Medico-Legal, Medical Education and Hospitals, and Relations to Public Health Administration): Drs. J. P. Simonds, Chairman, Gilbert Pond, R. F. Herndon, Bernard Klein, and Ralph P. Peairs.

4. Reports of Council Committees (Education, Scientific Service, Medical Economics, Veterans' Service and Medical Advisory Committee to Illinois Emergency Relief Commission): Drs. Arthur Geiger, Chairman, H. K. Seatliff, P. R. Blodgett, C. M. Fleming and Harry Phillips.

5. Committee on Scientific Work, Social Security Problems, The Editor and Historian: Drs. G. C. Otrich, Chairman, H. F. Bennett, F. O. Fredrickson, F. H. Muller, and H. A. Beam.

6. Resolutions Committee: Drs. C. H. Phifer, Chairman, Oscar Hawkinson and C. W. Carter.

7. Committee on Miscellaneous Business: Drs. Walter Stevenson, Chairman, Frank L. Brown, G. R. Ingram, J. S. Nagel, and C. F. Kelly.

8. Attendance Committee: J. W. Long, Chairman, M. I. Kaplan, and W. W. Ritchey.

Dr. W. E. Kittler, Rochelle, moved that the Committees as named be accepted. (Motion seconded by Dr. C. E. Wilkinson, Danville, and carried)

The President: The next order of business is the consideration of the reports of officers and standing committees. These will be referred to the Committees just named.

REPORT OF THE PRESIDENT

To the Members of the House of Delegates:

In reviewing the operations of the Society during the past year your officers have felt quite optimistic. Nothing has occurred since the previous annual meeting to bring discouragement. To be sure events move slowly at times and the Social Security Act is a constant menace but it has advanced imperceptibly, if at all, and there is a possible hope that its further march may be prevented. This Act is the most imminent and sinister cloud on our horizon.

Your President has attended meetings in various parts of the State and he is gratified to report that

he found everywhere a vital and felicitous interest in Society affairs by all the units of our organization. Everywhere a philosophical cheerfulness seemed to cover the professional disturbances and a resolute determination to pull through to happier times was evident. Our colleagues are hopeful and express a general satisfaction that Organized Medicine and especially this Society is working for the benefit of its members and for the advantage of the profession as a whole.

In considering some of our affairs more particularly it was observed that the reduction in dues has not apparently in any degree influenced an increase in membership. In fact, as the Secretary will report, the membership remains about stationary in spite of the many advantages which would follow a legitimate and much desired enlargement. At present there are still from two to three thousand eligible men in the State who are not affiliated with the organization although they participate indirectly in many of the benefits which accrue to the profession at large through the Society's activities.

The Council has met at the times designated by the Constitution and also for conference when crises have arisen. These meetings have been fully attended by Councilors and guests who had something of importance to contribute for the advantage of this Society. The most definite impression to be gained from a meeting of the Council is the earnestness of the members' deliberations and their consecration of purpose.

The Secretary has again demonstrated his competency undiminished together with an unabated zeal, both mental and physical, by his pervasive visitations around the State and by the stimulating confidence he arouses in his hosts and audiences. It is difficult to express an appropriate appreciation of his tireless and ubiquitous operations in his very presence.

The Committees of the Society, both standing and special, have functioned with gratifying results.

The Committee on Scientific Work has been conscientiously active and has brought to flower the splendid program which lies before us as proof.

The report of the Scientific Service Committee which is printed herewith gives the reader a good idea of the vast spread of this group's operations and the importance of their mission in disseminating the gospel of medical thought and ideals, through Clubs, Parent-Teachers' Associations and Newspapers.

The Economics Committee has had an unusually stressful year by reason of the constant political effort to impose the social-so-called-Security Act upon the doctors.

That reasonable and unbiased people are aware of the illegality, the injustice and the futility of this measure is most probable but unhappily the measure is likely to be forced upon the profession through political pressure, personal greed and through the mental sterility and indifference of large groups who are wholly ignorant. Our hope will lie ultimately in the courts.

At the last meeting of this body the Economics Committee expressed the hope that in some part of the State an experiment in Group Hospitalization would be

attempted. It may now be announced that such a group is in process of formation in Chicago, and its progress will be studied with great intensity.

The Scientific Service Committee has operated with amazing efficiency as Miss McArthur's detailed report will demonstrate. The amount of work accomplished especially in the field of debates on State Medicine and on Gynecological and Heart Clinics is remarkable. Here it is only fair to pay tribute to the excellent arrangement of the Committee business and the extraordinary competence and unselfish devotion of the personnel in the execution of the program. The cordial cooperation of the office in aiding and forwarding every demand made upon it arouses universal admiration.

The Educational Committee has carried on with its customary efficiency as the more elaborate report of Miss McArthur will show. Here also the debates on State Medicine and the Security Act in the High Schools and 450 different groups of people have imposed a mass of extra labor on the Committee which has been competently met. It is a pleasure to pay tribute here not only to the skillful planning of this Committee but also to the zeal, capacity and unselfish devotion of the personnel in executing the multiple demands of operation.

The Medico-Legal Committee has carried an immense responsibility in managing the attacks upon our doctors. The industry and conscientious service which these men give to their work is vitally important and highly appreciated by the members of this Society whose reputations they protect.

The Legislative Committee has been on the firing line during the recent series of special sessions of the Assembly and presents a highly satisfactory report which is called to your particular attention.

The Committee on Education and Hospitals is directing especial study to the important question of Cancer in its various relations to public health. This report has a deep significance and should be thoughtfully analyzed.

The State Medical Advisory Committee on Relief Work has borne the greatest weight of responsibility during the depression and has succeeded admirably in spreading relief funds widely among the doctors. The industry of this committee and its unselfish devotion has received the highest approbation of our members and the unqualified appreciation and gratitude of Mr. Lyons, the Executive Secretary of the Relief Commission.

These committee reports have been mentioned in brief detail partly to give public recognition to the loads these devoted men are carrying but in addition to call attention to the extent and variety of responsibilities the Society is taking on for the good of the profession and the health of our citizens.

The State Journal has maintained the high degree of excellence for which it is noted and requires no further commendation than to say if you want information on any subject look in the *ILLINOIS MEDICAL JOURNAL*.

In closing this review of our year's work it is especially agreeable to report what, to the writer, appears to be the most notable achievement of the period and the most vital contribution to medical progress which

has occurred in many years. Reference is made particularly to the success of the Society's suit to prevent the practice of medicine by corporations. The decision of the Supreme Court, as all know, was unqualified and comprehensive in its endorsement of the Medical Practice Act and in laying the foundations for legal action by the officers of the Society.

This contest was begun in 1932 and was conducted in spite of many discouragements as well as the active opposition of corporate interests up to January of this year. The final success must be accredited in large measure to the ability of our counsel, Mr. Kelly, and to the pertinacity of Dr. Humiston, chairman of the committee in charge.

The decree of the Supreme Court however is not automatic in execution and it is therefore recommended that a special committee be chosen to see that the provisions of the law are duly enforced.

In conclusion we can safely say, that the outlook from all appearances is steadily growing brighter for the future of medical men.

Respectfully submitted,

Charles B. Reed, M. D., *President*.

REPORT OF THE SECRETARY

To the Members of the House of Delegates:

Your secretary is once more honored in the presentation of his 1936 annual report. The past fiscal year which ended on April 30, was one of the most trying twelve months in the history of this Society. One year ago when the House of Delegates was in session we were intensely interested in the deliberations at Washington which would eventually result in the development of a Social Security Act. At that time we had no idea as to the features which would be incorporated in the act, and had reason to suspect that some plan of Socialization of Medicine and regimentation of physicians would be developed.

On August 14, 1935, the Social Security Act was signed by the President and became a law. We were pleased to note that "State Medicine" was not actually included in this act, although several titles of the act referred to various phases of medical practice. The Act therefore, is of interest to physicians both as pertaining to their professional work, and as taxpayers.

The State of Illinois has proceeded slowly in accepting Federal aid as provided in the Social Security Act, and our Society has maintained a most cordial relationship with the State Department of Public Health, that division of our State Government which has been designated to submit the necessary programs subject to the approval of the Federal Security Board, and see that their provisions are carried out.

Like the House of Delegates of the American Medical Association, the House of Delegates of the Illinois State Medical Society has maintained repeatedly opposition to all efforts to change the status of medical practice and medical progress, opposing all inroads, short cuts, or subsidization programs which have been proposed by members of our Federal Congress, some officials, and various individuals who have insisted that

we need a change in the manner of providing medical care for the American people.

One year ago therefore, the menace of "state medicine" seemed more threatening than it does at this time, but it is necessary that every member of this Society should be on guard constantly if we can reasonably hope to aid in the moulding of public opinion against any radical changes in the method of providing medical care.

It is quite obvious to all that the medical profession must remain united and be constantly ready to prove the often repeated statement that the medical profession alone is the proper group capable of determining the type of service which is best for the citizenry, and that type which will give a reasonable assurance that medicine will progress.

The Society. During the past year the activities of the Illinois State Medical Society have increased although the income has been reduced through the reduction of the annual per capita assessment. It has been necessary to create new committees for special services and investigations, in addition to the already long list of committees which have been functioning for many years.

With an unusual number of special sessions of the Illinois Legislature, the work of the Legislative Committee has been greater than at any previous legislative session, for it has been necessary for our Committee to carefully review all proposed bills which have been introduced even at these special legislative sessions. The record of achievement as previously referred to in our annual reports as pertaining to our Legislative Committee, has been maintained and we still believe that the Legislative Committee of the Illinois State Medical Society has a record of achievement which cannot be excelled anywhere.

There has been an increase in the expenses of the Medico-Legal Committee during the past two years, which is in keeping with the reports received from other societies in various parts of the country. We would respectfully call your attention to the interesting report of the Medico-Legal Committee published in this hand book.

The Educational Committee has done a great deal of work on an appropriation which has not been increased in several years. More services have been rendered to county medical societies, various lay groups, and to individual physicians than ever before, and at the same time the press, radio and other services have likewise been increased as the committee's annual report will show.

At the close of the fiscal year, our records show that there has been a slight increase in membership over the previous year, but it is quite interesting to note that the present membership is somewhat lower than that of two years ago when the annual dues were lowered, and the lowering of the annual assessment has not aided materially in the increase of membership which was hoped for when the reduction was made.

The increasing activities of the Society has made it necessary to draw some funds from the reserve during the past year, for the Council wisely ruled that at this

time it is not advisable to curtail the activities of the Society, but on the contrary, to increase them in a number of ways.

We still believe that every county medical society should have an active membership committee to interview the eligible non-members and bring them once more into active membership. We have a few Societies where every eligible practitioner of medicine is enrolled on the membership list, and we believe that a similar record of achievement can be duplicated in many societies if the proper effort is made.

The Council. The Council has met seven times during the past year, one session in January, March, one each day of the annual meeting, then in June and September. Much work has been done by the Council during the past year, and it is seldom that any member misses a meeting, and when compelled to do so, there is invariably a message explaining the absence.

Each committee of the council has submitted its report at each of these meetings, and many actions of importance to the Society have been taken during the year.

Through the action taken by the House of Delegates three years ago, we have in addition to the thirteen councilors representing eleven councilor districts, three Councilors at Large, the last three past presidents. When a member of this Society is elected to the office of President-Elect, it means that he will give five consecutive years of service to his Society, which we believe has improved the interest in the office materially.

The Component County Societies. There are but few of the component societies which do not have regular meetings, even though in smaller counties they are not held at frequent intervals. It has been demonstrated satisfactorily many times in Illinois that small societies, even with five or six members, are able to hold interesting meetings with a large attendance, and with the services of the Educational and Scientific Service Committees available, a mailing list of several hundred physicians in surrounding counties is made available to any society asking for the list.

In our many visits to county societies in all parts of Illinois, we have been firmly convinced that all members are more interested in both the scientific and economic sides of medicine than ever before.

During the past year, one small county medical society has given up its charter, and the few physicians in that county have affiliated with the societies in adjoining counties. All other societies throughout the state have maintained their organizations through another year.

The Secretary's Office. Twelve years ago when your Secretary was elected, the records which he inherited from his predecessor, were very inadequate, and with the exception of two small filing cabinets containing the membership and Journal files, all other records then available were found in two small boxes. Owing to the fact that many records had been lost by fire which destroyed the office of a former secretary, no records were available which would show the duration of membership of the present members.

A number of years ago at our suggestion, the Coun-

cil authorized the purchase of a large fireproof vault where all society and membership records are now stored. A new system of records has been adopted, and these have been printed in such quantities that many county societies have been furnished with a supply sufficient to care for their individual memberships.

We hope that in the near future these uniform record cards such as are used in our office, will be used in all county societies throughout the state. We have changed the recording system so that all transactions of this Society are carried in one large ledger, and we are able to carry a daily balance in all funds of the Society. Much valuable assistance in making these important changes has been rendered by our auditor, Mr. Fred N. Setterdahl, who has recently completed his 15th annual audit of the transactions of the Illinois State Medical Society.

We now have a permanent system of recording the many transactions which can be perpetually maintained and there is no danger of their becoming lost. We were fortunate recently in locating an early ledger form which gives membership data over a period of more than fifty years, and it is our hope to have these early records transferred to another file for permanent record in the near future.

The Annual Meeting. The Sangamon County Medical Society and its committee on arrangements have been most successful in arranging another fine annual meeting, with all sessions and exhibits under one roof. With the development of our annual meetings in recent years, it is most difficult to find buildings in Illinois with adequate facilities to permit proper arrangements.

The committee on Scientific Exhibits has arranged the finest display of interesting scientific exhibits that we have yet been permitted to show at the annual meeting. Suitable awards are to be made for the best exhibits in the three general classes, and we hope that every member at the annual meeting will look these interesting exhibits over carefully.

In order that we might accommodate the many fine scientific exhibits this year, our technical exhibits were limited to thirty in number, and these were carefully selected. We received applications from a number of concerns whose products were of questionable value to the medical profession, and our committee wisely ruled that they should not be permitted to exhibit at the meeting. These exhibits cover a wide range of service available to the members of this society, and it is hoped that our members and guests will spend some time among the technical exhibits.

Death of Prominent Members. During the past year we have lost three past presidents and a number of prominent members of the profession in Illinois who have been active in the affairs of this Society.

E. P. Sloan of Bloomington had been a member of this House of Delegates for many years and was prominent in its various activities each year. He presided over the transactions of the House of Delegates while President in 1923. He was for many years a delegate to the American Medical Association, and for the past five years was a member of the Judicial Council of the American Medical Association.

William D. Chapman who ended his earthly toils on March 16, became a member of the Council in 1921, was elected Secretary of the Society in 1922 and 1923, then resumed his seat in the Council in May, 1924. From 1925 to 1929 he was chairman of the Council and gave up his seat in the Council in May, 1929, when he was elected President-Elect of this Society. He officiated as President at the 1931 annual meeting held in East St. Louis. Dr. Chapman appeared before committees in Washington in 1929 and 1932 as an opponent to the Sheppard-Towner and Jones-Bankhead Bills, the first time as a representative of the Illinois State Medical Society, and the second appearance as one of five selected by the American Medical Association to oppose a bill which our medical organizations opposed.

M. L. Harris was president of the Illinois State Medical Society in 1903, was active in the re-organization of the American Medical Association at that same time, and a member and later chairman of the Judicial Council of the A. M. A. for many years. He was president of the American Medical Association in 1928-1929, and until physically disabled, was a regular attendant at the annual meetings of our State Medical Society.

A number of other physicians who have appeared at these meetings for years, some of them officers of their county medical societies have been called from their earthly labor during our fiscal year. The lives of these grand men in medicine were dedicated to service and their memories will be long respected by those of us who remain to carry on the work.

Councilor District Meetings. During the past year, there have been many Councilor District Meetings held throughout the state, and each of them has been well attended. Councilor Wilkinson presided over two meetings in the 8th District, one at Robinson, and one at Danville; both of the meetings were well attended by many physicians who traveled a long distance to enjoy them.

Similar meetings were held in other Councilor districts and it is our opinion that each Councilor should endeavor to have one district meeting each year, especially for the consideration of our ever increasing economic problems.

Proposed Changes in Constitution and By-Laws. A committee was selected last year to go over the Constitution and By-Laws and bring in a report at this annual meeting relative to the advisability of making a revision of same. After several meetings, this committee with Dr. Charles B. Reed as chairman, reported to the Council at the March meeting and the Council instructed the Secretary to have same mimeographed and ready for presentation to the House of Delegates at this meeting.

We have complied with this request and have submitted to you the proposed changes in the Constitution and By-Laws which the committee has recommended, and which have been approved by the Council.

There have been no radical changes recommended, but the proposed changes refer largely to the addition and duties of new committees, grammatical changes, and

changes in the manner of conducting the meetings of this House of Delegates.

Summary. The Illinois State Medical Society has gone through another trying year, but with the cooperation of the membership as a whole, another year of progress can be recorded.

It is our opinion that the entire membership of this Society is thoroughly aware of the present social security situation and is united in the opinion that it is necessary for all members to be continually alert and do everything possible to prevent any radical changes in the manner of providing medical care for the people of our state.

The thing which is probably uppermost in the minds of most people today is the tax situation, and whenever radical procedures are suggested the people naturally are interested in their ultimate cost. There is no doubt in the minds of thinking people that any plan for socializing the practice of medicine will add to the taxation, and this should be kept constantly in mind when discussing the present situation with our legislators and other friends.

We do not believe it is possible to curtail the present activities of the Illinois State Medical Society, and we are decidedly of the opinion that all present activities must not only be continued, but some of them must be increased.

The Bureau of Medical Economics of the American Medical Association has accumulated a vast amount of interesting data on economic problems and every member should get all available information on the subject. The Committee on Medical Economics of the Illinois State Medical Society has developed many interesting reviews covering many phases of the present day economic situation as pertaining to medicine, and all members should review these articles as published in the ILLINOIS MEDICAL JOURNAL each month.

The personnel of the Secretary's office is always anxious to cooperate in every way possible with the component societies and individual members and it is our desire to do everything possible to improve the present situation. We desire once more to express our gratitude to the many society officers for another year of splendid cooperation, and the maintenance of another year of cordial relations.

We desire to especially call your attention to the report of the auditor who recently completed his 15th annual audit of the transactions of the Illinois State Medical Society, which is incorporated as a part of this report.

MEMBERSHIP DATA

Members Reported in Good Standing, May 1, 1935.....6,970
Dropped During the Year—

By Death	214	
By Removal	50	
Non-Payment of Dues	169	
By Expulsion	2	
Total		435
Number Reinstated During Year.....	61	
New Members Reported.....	485	
Total		546

Members Carried on April 30, 1936.....7,081

FINANCIAL REPORT OF THE SECRETARY

RECEIPTS FROM COUNTY MEDICAL SOCIETIES

Adams	\$ 335.00	Logan	\$ 290.00
Alexander	75.00	McDonough	64.00
Bond	85.00	McHenry	90.00
Boone	145.00	McLean	422.00
Bureau	189.00	Macon	492.00
Carroll	119.00	Macoupin	180.00
Cass	85.00	Madison	462.00
Champaign	367.00	Marion	137.50
Chicago Medical Society	20,621.00	Massac	43.50
Christian	140.00	Mason	55.00
Crawford	55.00	Menard	39.00
Clark	62.00	Mercer	70.00
Clay	67.00	Monroe	82.00
Clinton	55.00	Montgomery	100.00
Coles-Cumberland..	214.50	Moultrie	75.00
DeKalb	175.00	Morgan	192.00
DeWitt	87.00	Ogle	129.00
DuPage	315.00	Peoria	786.00
Douglas	77.00	Perry	75.00
Edgar	82.00	Piatt	67.00
Edwards	25.00	Pike	85.00
Effingham	108.00	Pulaski	65.00
Fayette		Randolph	85.00
Ford		Richland	
Franklin	65.00	Rock Island	594.00
Fulton	95.00	St. Clair	1,265.00
Gallatin	20.00	Sangamon	535.00
Greene	65.00	Saline	117.00
Hancock	44.00	Shelby	60.00
Hardin	25.00	Schuyler	25.00
Henry	232.00	Stark	
Henderson	40.00	Stephenson	183.00
Iroquois	113.00	Tazewell	125.00
Jackson	122.00	Union	70.00
Jasper	96.00	Vermilion	678.00
Jefferson-Hamilton.	175.00	Wabash	50.00
Jersey	30.00	Warren	120.00
Jo Daviess	85.00	Wayne	95.00
Johnson	22.00	Washington	50.00
Kane	625.00	White	50.00
Kankakee	357.00	Whiteside	140.00
Knox	197.00	Will-Grundy	495.00
Lake	456.00	Winnebago	705.00
LaSalle	540.00	Woodford	55.00
Lawrence	55.00	Williamson	100.00
Lee	435.00		
Livingston	127.00		

Total\$37,102.50

Subscriptions	\$ 113.50
Exhibits	2,831.25
Int., Treas. Acct..	75.00
Interest, Bonds ...	2,951.55

Journal	15,000.00
Bonds Called	5,000.00
Miscellaneous	251.82

Total Receipts..\$63,325.62

RECEIPTS AND PAYMENTS

May 1, 1935, to April 30, 1936

RECEIPTS

County Societies	\$ 37,102.50
Exhibits	2,831.25
Subscriptions	113.50
Bonds Called	5,000.00
Interest—	
Treasurer's Account	75.00
Bonds	2,951.55
Journal Advertising	15,000.00
Miscellaneous	251.82

Total Receipts\$ 63,325.62

DISTRIBUTION OF RECEIPTS

General Fund	\$ 26,196.36
Medico-Legal Fund	8,909.88
Legislative Fund	6,059.92
Journal Fund	22,159.46
Total Distribution	\$ 63,325.62
Cash Balance, May 1, 1935.....	45,526.54
Total	\$108,852.16

PAYMENTS

General Fund	\$ 25,028.93
Medico-Legal Fund.....	9,490.03
Legislative Fund	11,612.41
Journal Fund	19,057.77
Total Payments	\$ 65,189.14
Cash Balance, April 30, 1936.....	43,663.02
Total	\$108,852.16

CASH BALANCES APRIL 30, 1936

General Fund	\$ 2,379.62
Medico-Legal Fund	16,312.04
Legislative Fund	11,748.11
Journal Fund	13,223.25
Total Cash Balance	\$ 43,663.02

Respectfully submitted,

Harold M. Camp, M. D.
Secretary.

FRED N. SETTERDAHL

PUBLIC ACCOUNTANT

224 Robinson Building
Rock Island, Illinois

May 6, 1936.

Members of the House of Delegates,
Illinois State Medical Society:

CERTIFICATE OF AUDIT

I have audited the following accounts of your Society
for the year ended April 30, 1936.

Dr. H. M. Camp, Secretary.

Dr. C. J. Whalen, Editor.

Miss Jean McArthur, Secretary, Educational Com-
mittee.The Bank Accounts and Cash items which represent
the accounts of Dr. A. J. Markley, Treasurer, have
been verified and found to reconcile with the Secre-
tary's accounts.Interest has been received regularly from your Invest-
ment Fund Bonds with one exception during the past
year. The Interest received amounted to \$2,951.55. The
average market value of the Bonds are 99% plus of par
value. The total par value of the Bonds held are
\$66,000.00 and the market value as April 30, 1936, is
\$65,476.00.All Funds are deposited in the name of the Society
and the Bonds are held in Trust by the Depository
Bank.The records have been well kept and in my opinion
my detailed report furnished to your Council represents
the true transactions for the year.

Respectfully,

Fred N. Setterdahl,
Public Accountant.

REPORT OF THE TREASURER

Year ended April 30, 1936

TO THE MEMBERS OF THE HOUSE OF DELEGATES:

Your Treasurer wishes to make the following report:

RECEIPTS

From Secretary	\$ 40,174.07
From Editor	15,000.00
Interest on Deposits.....	75.00
Interest on Bonds	2,951.55
Sale of Bonds (Called).....	5,000.00
Bond Premium	125.00

Total Receipts	\$ 63,325.62
Balance, May 1, 1935.....	45,266.54

Total\$108,852.16

PAYMENTS

General Fund	\$ 25,028.93
Medico-Legal Fund	9,490.03
Legislative Fund	11,612.41
Journal Fund	19,057.77

Total Payments	65,189.14
Balance, April 30, 1936.....	43,663.02

Total\$108,852.16

All Funds are deposited in the name of the Illinois State Medical Society.

Deposited with the State Bank and Trust Company of Evanston, Illinois.....	\$ 17,323.86
Deposited with the National Bank, of Monmouth, Illinois	25,656.16
Checks on Hand, returned from Closed Bands...	113.00
Checks on Hand, received after Deposit April 30, 1936	735.00

Total	43,828.02
Less Checks Outstanding	165.00

Net Balance as above.....	43,663.02
There is Held in Trust, at the State Bank and Trust Company, Evanston, Illinois,—Bonds, par value	66,000.00

Total Cash and Bonds\$109,663.02

Respectfully submitted,
A. J. Markley, M. D.,
Treasurer.

REPORT OF THE CHAIRMAN OF THE COUNCIL

To the Members of the House of Delegates:

The past year has been a very busy one for the Members of the Council. The Council has held four regular meetings since the adjournment of the House of Delegates and all matters referred to same at your last meeting have received proper attention.

Aside from the usual routine of Council procedure, the rapid social and economic changes have created many problems of vital interest to the Illinois State Medical Society, and organized medicine in general, and the individual physician in particular. These problems have been presented to the Standing Committees of the Council for careful study and recommendation, many of which will be presented to this body by these Committees.

The Medical Advisory Committee, to the Illinois Emergency Relief Commission and later to the Works

Progress Administration, has rendered a fine service and its report is commended to the House. Further study of the care of the indigent and unemployed should be vigorously carried on with a definite idea of medical control when these groups are again taken over by the County and Township Boards, as the present trend of political events seem to indicate.—“Politics plays too large a part in the care of the indigent.”

The Committee on Medical Economics deserves more than honorable mention for the efficient manner in which they have tried to keep the medical profession informed, through the columns of the Journal, addresses before lay and medical groups, of the inherent dangers of the social security act, contract practice, and many other schemes of socialized medicine.

The Educational Committee continues to be a willing servant of the society, providing subject matter; materials for debates; speakers to all groups, lay and scientific; press releases; etc. As Chairman of the Council I commend this report to the House of Delegates.

The Legislative Committee has served the society in its usual splendid way. Organized intelligent legislation has been singularly successful in Illinois. “Not one bill opposed by the Illinois State Medical Society has become a law.” It should be a matter of grave concern to each member of the House of Delegates should the guiding minds of this Committee decline for any reason, further service.

The Medico-Legal Committee: The results accomplished by this Committee presented in a tabulated form fails to reveal the true picture of time and energy expended in investigation, and of the successful handling through diplomacy, skillful legal procedure, and the saving of thousands of dollars to the physicians annually by personal attention given each case.

The Corporation Practice Committee reports that many Corporations now practicing medicine in Illinois will be denied the privilege through a recent decision of the Illinois Supreme Court which states that Corporations cannot practice medicine in Illinois. The Committee believes that it will become necessary to ask for a special attorney general to act in these cases so that they will comply with the law, and that the court's action be upheld.

Dr. F. J. Jirka, Director of the State Department of Public Health, while not a member of the Council, has shown a fine spirit of co-operation by favoring only those programs submitted to his Department by the United States Public Health Service, approved by the Illinois State Medical Society. A special Committee of the Council was appointed to aid and advise him in his endeavors to get the best arrangement possible with the various governmental agencies interested in the Social Security Act.

Each Member of the Council has done the work assigned to him in a highly efficient manner and the Chairman desires to express his appreciation for their excellent work. Calm judgment, clear thinking and complete harmony have characterized the work of the Councilors and the Committees during the past year.

Your society has only two salaried officers, the Gen-

eral Secretary and the Editor. Each one is practically doing full time duty, but the honorariums they receive are small for the valuable service they are rendering the medical profession. Two years ago your society voted to reduce the annual dues to five dollars per annum, hoping thereby to relieve a financial situation among the more distressed members of our Society and to encourage those delinquent to reinstate. The records of the Society during this period show that a reduction in dues does not increase the membership. It is highly important that if our work is to be carried on efficiently in the future and our surplus be kept intact for the emergencies that might arise, the House of Delegates should seriously consider an advance in dues for the year beginning 1937.

Respectfully submitted,

I. H. Neece, M. D.,

Chairman of the Council

REPORT OF THE COUNCILOR OF FIRST DISTRICT

To the Members of the House of Delegates:

It is the desire of your Councilor to attend at least one meeting in each County during each year, and to assist in helping with programs and ironing out difficulties that may arise in the various Counties. Fortunately the Counties of the First Councilor District have had very few difficulties. They have shown splendid cooperation, and have had the usual number of good meetings. The main object of interest has been that of socialized medicine. We are all wondering what social security means and where it will lead to. We realize that conditions are changing, but believe that conditions which deviate from the usual order should be taken up very gradually.

It is interesting to note that from the beginning of things industry has thought it advisable and timely to interfere with the practice of medicine by the establishment of free clinics, and that now for the first time when the Federal Government begins competing with industry we see industry on the side of medicine demanding that the Government so limit social security endeavors as not to interfere with the private initiative of the physician. There is also evidence of increasing interest on the part of physicians to care for patients in the lower brackets of financial responsibility. Physicians are being urged and should take an active interest in the care for low wage groups in such a way that they will secure the best possible medical service at a minimum cost yet which will be of slight financial aid to the physician.

Let us not, in our worries about financial security, forget that we are members of a profession and should endeavor in every possible way to increase our knowledge of scientific, intelligent service to mankind.

Edward H. Weld, M. D.,

Councilor of the First District.

REPORT OF COUNCILOR OF SECOND DISTRICT

To the Members of the House of Delegates:

The County Medical Societies of the Second District

have passed through another year of this rather trying period in the history of organized medicine and have emerged in excellent condition. Individual doctors, in general, have shown a fine disposition to cooperate and present a united front against the forces which threaten to undermine the principles for which organized medicine stands.

The Second District is made up of the counties of Livingston, LaSalle, Bureau, Lee, Whiteside, Woodford, Marshall and Putnam. Marshall and Putnam are small counties with no large towns and most of the doctors are members of the societies of adjoining counties. All of the other counties have well organized societies and have had good meetings during the past year. There has been no district meeting devoted to the problems of medical economics but most of the societies have held special meetings to consider this subject, with competent, invited speakers.

Whiteside County has a clinic for physically handicapped children. The following quotation from the secretary of the society is of interest: "We are still carrying on our clinic for physically handicapped children and the longer it runs the more need we can see for it, and the more interest the members of the society are taking in it."

Throughout the district membership has been well maintained and while as always there have been some problems none of them have been serious ones.

Edgar C. Cook, M. D.,

Councilor of the Second District.

REPORT OF COUNCILOR OF THIRD DISTRICT

To the Members of the House of Delegates:

The membership of the Chicago Medical Society has shown a substantial increase during the past two years. At the end of 1933 there were 2,712 paid members, while in 1934 the roster had grown to 3,171, and in 1935 to 3,806. The paid up membership on April 1, 1936, was 3,087, as compared with 2,721 on the same date last year.

Through the untiring efforts of Dr. Charles H. Phifer and his committee the profession in Cook County has profited by the average monthly payment of \$44,000 for care of the patients coming under the jurisdiction of the Illinois Emergency Relief Commission, and amicable relations have been maintained with that organization.

The Economics Committee under the guidance of its able chairman, Dr. Herman Kretschmer, has brought us into closest relationship with the dispensary clinics that we have ever enjoyed. It is his belief and our hope that some sort of reasonable economic basis will be recognized by the clinics in an effort to restrict their benefits to the truly deserving, and thereby minimize the abuses that were shown to exist by the splendid work of this committee in its survey last year.

Since the legality of the Illinois Medical Practice Act has been definitely determined by the Supreme Court, the Council of the Chicago Medical Society has been bombarded by resolution petitions that its officers and the officers of the state society actively engage in pushing the prosecution of violators of the Act.

It is hoped that the precedent established by the local society in taking an active part in assisting the authorities in the solution of the murder of one of its members will encourage other county organizations to thus publicly protest the molesting of medical men engaged in pursuance of their professional ministrations.

Respectfully submitted,

John S. Nagel, M. D.,

R. K. Packard, M. D.,

L. E. Day, M. D.,

Councilors of the Third District.

REPORT OF COUNCILOR OF FOURTH DISTRICT

The Councilor of the Fourth District has attended all Council and Committee meetings with the exception of one. Several meetings of this District have been attended whenever such a request was made and from a general observation of conditions in this District, and throughout the state, it is apparent that medical conditions in this locality compare rather favorably with those found in adjacent places.

There has been a gradual tendency in most communities toward an improvement in general business conditions and this has been reflected in a corresponding improvement in the condition of our members practicing in these communities.

During the past year the Emergency Relief Organization has been doing less and less, but even at that the improved business conditions make this deficiency less noticed.

The County Societies have varied practically not at all from the preceding year. The larger ones are meeting regularly and have excellent attendance; the smaller ones meeting less frequently but many of them having a good attendance when such meetings are held.

I know of no particular troubles that have developed in the past year and believe that both from the standpoint of membership and financial condition of our members, conditions have improved.

Respectfully submitted,

E. P. Coleman, M. D.,

Councilor of the Fourth District.

REPORT OF COUNCILOR OF FIFTH DISTRICT

To the Members of the House of Delegates:

In the Fifth Councilor District it is quite apparent that progress is being made in most of its eight counties to strengthen their organizations and extend their influence scientifically among the members, as well as their responsibilities to their respective communities.

We are trying to maintain closer contact with organized groups among the lay public that have concerned themselves with medical and public health affairs. Wherever a medical speaker is desired we have endeavored to furnish the speaker either from talent in the Fifth District or through the Educational Committee.

Fortunately, on account of weather conditions during the past winter, your Councilor began an annual visitation last summer which was completed in the autumn. It has seemed to your Councilor that the secretaries in

our larger societies are much overworked, and we advised that a special committee, known as the Economics Committee, take over all such literature that comes to his desk, both from the Educational Committee and the State Secretary, and present this to their Society and any other societies or lay groups. This enabled each County to select their own committee and have the responsibility of making a study of these subjects, instead of the Councilor appointing a few men to speak throughout the District. This plan has worked out very well in some of our larger societies and will be further developed during the coming year.

Mason County sponsored a meeting for the northern half of the Fifth District, at Mason City, December 11. This included four counties, and almost the entire membership was present, with representatives from other surrounding counties. Dr. Charles B. Reed, President of the Illinois State Medical Society, gave an address on "Contract Practice," and Dr. Harold M. Camp, Secretary, gave an address on "Recent Trends in Medical Economics." Dr. Frank J. Jirka, Director of the State Department of Public Health and the Social Securities Act." This was one of the best meetings held in the Fifth District the past year, and appropriate resolutions were passed expressing the approval and appreciation to the speakers of the evening.

The sixty-first annual meeting of the Central Illinois District Medical Society was held in Springfield, April 17, 1935, with the Sangamon County Medical Society and the Fifth Councilor District. Most of the officers of the State Society were present, with Dr. Walter L. Bierring, President of the American Medical Association, a guest of honor. Addresses were made by these officers at a dinner given in the evening. The meeting was attended by about two hundred physicians from central Illinois.

There has been a much greater incidence of sickness among our doctors the past winter, as well as among our people. Therefore, the doctors have been busy, particularly the physicians in the rural communities, and collections have generally been better the past year. This phase of the economic situation has had its salutary effect, eliminating some of the disagreeable features of medical practice that always creep in during times of depression and distress, such as contract practice in its worst forms, as well as non-payment for medical services where payment is rightfully expected. This is always true in times of economic distress.

I believe the severe winter, with a greater amount of sickness, has prevented the committees of the county societies from giving more time to their economic problems. Therefore, I expect much greater effort will be put forth by each society in the Fifth District to rebuild their machinery and carry to success what was only partly accomplished during the past year.

Your Councilor attended all Council meetings the past year except the March meetings, on account of sickness from influenza in January and February. The kind expressions from the Council during this illness are gratefully acknowledged.

Sangamon County lost two members by death, Dr. Walter G. Bain and Dr. G. D. Lockie, both of high standing in the community and loyal to our profession. On account of Dr. Bain's connection with St. John's Hospital for the past twenty-five years as pathologist and in charge of their laboratories, he was very widely and favorably known. His death was quite unexpected, following an operation for removal of gall-stones. He will be very greatly missed by the medical profession and his host of friends.

The loss by death of a former President of the State Society from the Fifth Councilor District was keenly felt by the entire membership. Dr. E. P. Sloan needs no eulogy expressed by me to more deeply impress the minds and hearts of his host of friends of his many qualities as an organizer and an indefatigable worker for the rights and high standards of the medical profession. His loyalty to his friends and profession was his standard of integrity.

In response to a questionnaire sent to all the societies in the District, we submit the following reports:

DeWitt County: Membership, 17; one delinquent member; four gained and two lost during the year.

Ten meetings held, with average attendance of ten.

Furnished speakers for medical talks at County Teachers' Institute and District P. T. A. meeting.

Conducted summer round-up examinations in the county.

Plans now in progress for County nurse and a county-wide educational program.

Logan County: Membership, 26; one delinquent member; four gained and three lost during the year.

Six meetings held, with average attendance of twenty-five.

Mason County: Membership, 12; two delinquent members; one gained and none lost during the year.

Four meetings held, with average attendance of ten.

Sponsored the meeting for the northern half of the District at Mason City, December 11, mentioned in the foregoing report.

Menard County: Membership, 6; none delinquent; one gained; none lost.

Two meetings held.

McLean County: Membership, 77; seven delinquent; five gained and five lost during the year.

Ten meetings held, with average attendance of forty.

This county has finally established its own clinic for crippled children and its Secretary, Dr. Ralph P. Peairs, is doing its orthopedic work. This was our advice to the larger County Medical Societies three years ago, that these clinics be organized by the County Medical Societies without domination from lay groups.

Montgomery County: Membership, 20; one delinquent. Regular meetings held, with good attendance.

Tazewell County: Membership, 20; none delinquent; three gained with none lost during the year.

Seven meetings held, with average attendance of eleven.

Sangamon County: Membership, 119; five delinquent; four gained and six lost during the year.

Twelve meetings held, with average attendance of sixty.

Furnished the program and entertainment for the Central Illinois District Medical Society meeting in Springfield, as mentioned elsewhere in this report.

Respectfully submitted,

Samuel E. Munson, M. D.,

Councilor of the Fifth District.

REPORT OF COUNCILOR OF SIXTH DISTRICT

To the Members of the House of Delegates:

The past year of medical affairs in the Sixth District has convinced your Councilor that the profession is not as firmly united as it should be. Too many of our members are prone to hold jobs at ridiculously low salaries or fees and refuse to give them up. This is a serious condition of affairs when we consider the present tendency toward regimentation and state medicine. It behooves the younger men in the profession to take more interest in medical affairs. Absence of the younger men from meetings is noticeable.

The organization of the Mississippi Valley Medical Society, which held its first meeting in Quincy during the fall season was the most outstanding event of the year and gives promise of a successful future. The attendance was good and the exhibitions were outstanding. The program was of a high character and brought many prominent speakers to address the meetings. The 1936 meeting is to be held in Burlington, Iowa, in the fall. The cities included in the society are Quincy, Illinois; Hannibal, Missouri; Keokuk, Iowa, and Burlington, Iowa.

The profession in the Sixth District is still opposed to the attempts of the Federal Government and other groups to make further inroads into the practice of medicine.

A successful arrangement has been made by the Adams County Medical Society for the care of the indigent, with the Board of Supervisors, whereby all members of the Society in the County participate in the calls. The office of City or County Physician has been abolished. We are now endeavoring to get other counties in the district to adopt a similar plan. Up to date the plan is working satisfactorily in Adams County. The bills are paid out of County funds, and the doctors called in rotation.

One county has been requested to give up its charter. The county has so few members that they have joined neighboring county societies.

There are now two counties in the District without a county society. Meetings are held regularly in the other counties with the usual good attendance and a lively interest in medical economics.

The general opinion appears to be that conditions are better and the doctors are happier.

The WPA program as it is at present operating, is not meeting with favor. It appears that the only fair system is to distribute the calls equally, and when an emergency arises, consultation should be made available as in private practice.

The inauguration of wayside first aid stations and training filling station attendants and waiters in hot dog stands as proposed by the State with Federal aid appears to us as establishing a dangerous precedent and should meet with your disapproval as these are surgical and medical problems and should remain so.

In looking over the proposed changes in the Constitution and By-Laws, giving the names of Past Presidents and year of election, I notice the absence of the name of Doctor C. D. Center, who met an untimely death before his inauguration. I appeal to you to place his name on that honored list.

Due to our rapidly changing economic conditions your Councilor is of the opinion that the House of Delegates of this Society through a committee be authorized to work out some plan for the adequate medical care of our large low income class, whether this takes the form of a pre-payment plan, insurance or otherwise, and report back to this House of Delegates next year. I feel that some plan for the medical care of this class should come from the State Society instead of local and haphazard plans or State or Federal plans, which are going to confront us later on. Therefore, we should be prepared with a definite plan of our own. This, I believe, is one way to defeat State medicine. The plan ought to be entirely under the control of the State Society.

Respectfully submitted,

Thomas B. Knox, M. D.,
Councilor of the Sixth District.

REPORT OF COUNCILOR OF SEVENTH DISTRICT

To Members of the House of Delegates:

As in previous years the Councilor of the Seventh District has attended all the Council Meetings, as well as many special committee meetings, and all County meetings in this district when requested to do so. Have addressed a number of lay groups, luncheon clubs and medical organizations, on the Social Security Act. Was impressed by the reaction of these groups to the need for a more intensive educational program on the laws affecting the relation of the whole population of a community in their bearing on medical practice; especially on the current legislation of; 1. The Social Security Act. 2. Old Age Pensions and Sickness Insurance. 3. Public Relief Measures. 4. Laws of Corporate Practice of Industrial, and other Organizations, in relation to medicine.

The County Societies in this District have taken a keen interest in the problems of the Care of the Indigent, as evidenced by a questionnaire submitted to each relative to same. Not a few Counties have been able to work out a satisfactory program with the Boards of Supervisors. Many County Meetings have been devoted entirely to economic problems, and a fine spirit of cooperation has prevailed between Relief Agencies and WPA. In the larger centers of population the Board of Supervisors have been rather antagonistic to Society suggestions, preferring to employ one General physician and an Assistant to take care of the normal indigent and in one county four township su-

pervisors pooled their pauper budget and employed one physician at a salary of \$4,000.00 per annum to furnish complete medical and hospital care. This physician is not a member of the County Society. Other township supervisors have likewise advertised for competitive bids for a like contract. In view of the above facts the greatest need in counties represented in the Seventh District is an intensive campaign for membership.

The scientific meetings have been well attended and unusual interest taken.

The problems we are facing in Illinois are common to all other State societies. While attending the Northwest Regional Conference I listened with interest to the many plans that are being promulgated to lead us out of the medical "wilderness" in which we find ourselves, but to date with all the ballyhoo and condemnation with this or that scheme we are far from a solution. It is the private opinion of the Councilor that leadership should have been found in the personnel of the American Medical Association and the vast resources of that association should have been available for the leaders of the New Deal in formulating plans for the successful operating of the Social Security Act as it relates to organized medicine.

Respectfully submitted,

I. H. Neece, M. D.,
Councilor of the Seventh District.

REPORT OF COUNCILOR OF EIGHTH DISTRICT

To the Members of the House of Delegates:

As Councilor of the Eighth District, I am pleased to report that the membership of the component medical societies has been maintained and in some counties there has been an increase in membership over 1935. The majority of the county medical societies in this District hold regular monthly meetings. Frequently they have outside speakers of reputable standing, at which time, members of adjoining county societies are invited. I think this inter-society relationship is a fine idea and should be encouraged.

For the past year, we have followed the plan of holding a Councilor's meeting for the counties in the south end of the District in the fall and a joint meeting for the counties in the north end of the District in the spring.

Through the courtesy of the Crawford County Medical Society at their regular monthly meeting, October 17, 1935, a joint meeting of Lawrence, Richland, Jasper and Clark County Medical societies, was held at Robinson, Illinois. Dr. R. K. Packard, Councilor of Third District, Chicago, and Dr. Harold M. Camp, our Secretary, were speakers for the evening. Dr. Packard's subject was "Economic Trends and Their Influence on Medical Economics and Medical Ethics," while Dr. Camp talked on the subject, "The Physician and the Social Security Act." There was a good representation from all the counties and much interest was shown in the meeting.

On April 7, 1936, through the courtesy of the Vermilion County Medical Society, a joint meeting of

Champaign, Douglas, Edgar and Coles-Cumberland County Medical Societies, was held in Danville. Notices were also sent to some of the adjoining counties not in the District and to several physicians of western Indiana. The program for this meeting was furnished by Dr. Olin West, Secretary and General Manager of the American Medical Assn.; Dr. Charles B. Reed, President of the Illinois State Medical Society; and, Dr. Harold M. Camp, Secretary of the Illinois State Medical Society. Dr. West's subject was "Medical Organization and Its Policies"; Dr. Reed presented a paper on "The Physicians and the Pharisees"; and Dr. Camp talked on, "The County Medical Society and the Community." The public was invited for the program and more than one hundred laymen attended, from the different clubs and civic organizations, and many teachers and a few lawyers, who showed a great interest in the program. We were favored by the presence of our President-Elect, Dr. R. L. Green of Peoria and Dr. F. S. Crockett of Lafayette, Indiana, who has been very active for many years in the American Medical Association.

It has been my privilege to attend all the Councilor meetings during the past year and some specially called meetings of the Medical Economics Committee, of which I am a member.

Respectfully submitted,

C. E. Wilkinson, M. D.,
Councilor of the Eighth District.

REPORT OF COUNCILOR OF NINTH DISTRICT

To the Members of the House of Delegates:

The Ninth District is composed of 14 counties in the south and eastern part of the State. These counties have 13 organized societies. The Jefferson-Hamilton, Franklin, Williamson and Saline counties have good memberships, have regular meetings and scientific programs that will compare favorably with any society in the State.

The other county societies in the district meet and organize each year and have meetings occasionally. However, with good all-weather roads, most of the physicians in these smaller counties attend the scientific programs regularly held in the adjacent counties.

Scientific programs, when not furnished by the local physicians, are usually furnished by physicians from St. Louis, Evansville and other larger surrounding cities, without any expense to the State Society.

The Ninth District is infested with very few irregulars and quacks. This class of pseudo-practitioners can prosper only in the less enlightened districts of the State.

Respectfully submitted,

Andy Hall, M. D.
Councilor of the Ninth District.

REPORT OF COUNCILOR OF TENTH DISTRICT

To the Members of the House of Delegates:

Alexander County has 18 licensed physicians, 15 of

whom belong to the County Society. Splendid programs were given each month last year. One new member and one lost. Dr. Ray E. Barrows, of Cairo, fifty-one years of age, died of coronary thrombosis. Besides doing a general practice, he had charge of the Public Health Service of Alexander County for the last fifteen years.

Union County held regular meetings the past year. Their attendance was good and interest better than for years past. Thirty-one members of the County Society with one loss and one addition. Doctor W. E. Lingle, a beloved and successful practitioner of Cobden for forty-two years, passed from his earthly duties last March. Union County uses local speakers part time.

Washington County Society has but ten members of the fifteen registered physicians of the County. Do not have regular meetings and have the same membership as last year.

The Randolph County Medical Society has more than two-thirds of the registered physicians of the County in the organization and have held good meetings the past year. Doctors O. C. Church and A. C. Wiebusch died during the year. Both had been practicing for more than a quarter of a century and left the city of Steelville without a physician, they being the only physicians there.

St. Clair County has gained eight members the past year; has others that should belong to their Society. Interest in their meetings has shown a marked increase. Six have died during the past year. Charles F. W. Wilhelmj, born in 1858. Practiced in East St. Louis 55 years. Michael Earl Brennan. Graduated from St. Louis University School of Medicine in 1921. Practiced in East St. Louis. Died at the age of 41. Ernst Phillip Raab, born in 1839. Graduated from University of Pennsylvania School of Medicine. Practiced in Belleville 50 years. Harvey S. Smith, born in 1874. Graduated from Marion-Sims College of Medicine. Practiced in East St. Louis 36 years. Died at the age of 61. John Henry Fulgham, born in 1872. Graduated from Marion-Sims College of Medicine. Practiced in East St. Louis 39 years. Died at the age of 63. Eugene Thompson, born in 1864. Graduated from Missouri Medical College. Practiced in East St. Louis 45 years. Died at the age of 71.

Jackson County Medical Society has 32 of 40 registered physicians with dues paid. There has been a slight loss in membership during the year. Regular meetings have been held and the interest has been excellent. There have been no deaths in the Society, which we are very glad to report.

Perry County is a fortunate one in not having to report deaths during the past year. A fine spirit has prevailed among the medical fraternity. Every licensed physician in the County belongs to the County and State Association. Meetings have been held regularly, interest and attendance being better than ever before.

Other smaller counties in the district, have for some reason failed to respond to the request for reports.

Taking it all together the 10th District, it seems to

your Councilor, has had a very successful year for organized medicine and service to humanity.

Respectfully submitted,
J. S. Templeton, M. D.,
Councilor of the Tenth District.

REPORT OF COUNCILOR OF ELEVENTH DISTRICT

To the Members of the House of Delegates:

The year of 1935-1936 has been a most successful one in the Eleventh Councilor District. Throughout the district the membership is at a high level and the interest in the problems of medicine is the greatest it has ever been. Every society is making a sincere effort to inform the people of their community of the dangers confronting the future of the practice of medicine through cooperation with luncheon clubs, woman's clubs, Parent-Teachers Associations and similar organizations. The interest of these organizations in our problems has been great and is most encouraging.

The DuPage County Society has been very active. Their regular monthly meetings have been well attended and the programs have been interesting and presented by excellent men. They have continued to study the problem of Contract Practice and a New Fee Schedule, which was adopted late in 1935. Membership has increased during the past year and the society is one of the most active in the district.

Ford County Society has practically every available physician as a member. The total number of physicians in the county is small since this is a strictly agricultural county. They have held several most interesting meetings, with good attendance. They attend meetings in the surrounding counties very well.

The Iroquois County Society has held several meetings addressed by men from surrounding cities and the attendance has been good. Their membership is about the same as in previous years as they have had practically all the available members for many years past. Their officers are enthusiastic and cooperative.

The Kankakee County Medical Society continues to have a fine percentage of membership. Regular meetings addressed by outstanding men in the profession in Illinois have been the speakers. Attendance has been excellent. Cooperation with the two State Institutions for the Insane located in this county has continued to be of the highest this year as in the past. There has been an increasing interest in the affairs of the society by the men in State service the past few years, and this has been reflected by the interest of the men in general practice in the work done in the State Institutions. The annual clinic day was held last May with the President of the Illinois State Medical Society as the chief speaker.

The Will-Grundy Society is the largest and probably the most vigorous in the district. With weekly meetings, addressed by outstanding men from Chicago, interest in the scientific side of the profession is held at a high level. In addition they have an annual Tumor Clinic, a picnic and other social affairs which have welded the society into a most able group. Membership continues to increase and they are in the best financial

shape they have been since 1931. It is always with pardonable pride that the condition of this Society is reported.

Throughout the district there has been no particular problems arising to vex the Councilor. He has attended meetings in most of the County Societies, although he has spent the greater portion of his time in the work of the Committee on Medical Economics and some of the other committees of the State Society of which he is a member.

Your Councilor has attended every regular and special meeting of the Council as well as the Committees of which he is a member. This takes considerable time and energy but the friendships resulting and the accomplishments of the past few years more than compensate therefor.

Respectfully submitted,
E. S. Hamilton, M. D.,
Councilor of the Eleventh District.

REPORTS OF COUNCILORS AT LARGE

To the Members of the House of Delegates:

My activities have been devoted to the work of establishing new clinics for handicapped children in the State of Illinois. After extensive correspondence with men interested in orthopedic and reconstruction surgery we have been able to make up a very splendid list of clinicians both in Chicago and throughout the State of Illinois. The services of these surgeons are available for any county society wishing to establish a handicapped children's clinic.

There are now a considerable number of such clinics active in the State. The first clinic, organized in Warren County, has been in existence for ten years, and it is impossible to estimate the amount of good work which has been done by the men of that county medical society and their associates.

Your Councilor is very desirous of having at least ten new clinics established in the coming year, these to be held under the auspices of the county medical society and conducted by qualified clinicians.

Respectfully submitted,
Philip H. Kreuscher, M. D.,
Councilor at Large.

To the Members of the House of Delegates:

As Second Councilor at Large, it is my pleasure to report to the House of Delegates for the first time. The office I hold was given to me as a continued service to the state society because you had entrusted to me the presidency of our society. I feel that I owe to the society this continued service for the honor you bestowed upon me.

It has been my privilege to attend all the meetings of the Council except one, which I was compelled to miss on account of illness. This, I feel should be included in my report to you because you had a right to expect me to be present at all the meetings of the Council.

It was my privilege as well as my duty, to attend the economic conference held in Chicago. I carried away from this meeting much information that was of great

value to me in presenting the question of medical economics to other physicians and in our laymen's program of education.

The office of councilor at large is a new office in our councilor body and the duties of the office are not as yet well enough defined in my mind to function to the fullest degree of the expectations of the regular councilor body. The council has recognized this fact and has dealt kindly toward my deficiencies. Our duties as councilors at large are of a delicate nature as they are largely of advisory nature and it was the part of wisdom to make them such, as the future of the office will declare. But at present we must tread softly, for those whom we are expected to advise are not accustomed to this service and this too is as it should be now.

The office of councilor at large will add three more members to the official body of the state society and thus will more widely distribute the work and in my opinion this is help that is needed. The ever increasing demands that are being brought to the officers are becoming more than they can handle with the present numbers.

I have addressed a number of medical societies and lay groups in the past year and I am convinced that the profession and public are coming rapidly to understand the meaning of socialized medicine in the light that organized medicine has defined it. I believe that much ground has been regained and that organized medicine is more strongly entrenched in its rights than a year ago.

The physicians are becoming not only willing but anxious to share of their time in helping to safeguard the best interests of their profession, and I predict a more united profession a year hence.

Respectfully submitted,

Charles S. Skaggs, M. D.,
Councilor at Large.

REPORT OF PUBLIC RELATIONS COMMITTEE

To the Members of the House of Delegates:

For several years past a great many of the Insurance Companies have been asking the physicians to cut their bills, usually by one-third, insisting that these bills are higher than they pay for industrial service, some of the companies charging that the fees were in excess of those approved by the State Industrial Commission. We found, upon investigation, that no matter what the itemized statement submitted by the physician called for, he was informed that the charge should have been one-third less than the bill rendered, this in spite of the fact that the charges were made in strict conformity to the fee schedule approved by the community.

Physicians generally, have been soft marks for these companies. Needing money badly and being unwilling to fight for their rights they have agreed to this and settled on that basis. This has been so general that many of the companies have insisted over months, and the physician is finally worn out and agrees to settle.

The Illinois Industrial Commission does not have a fee schedule which governs the charges for medical or surgical care to injured employees, and it has invariably been the decision of all courts that the fees cus-

tomarily charged in that community, shall prevail in the cases where the contest is carried to the courts.

Following the Annual Meeting in 1934, at which time the committee was empowered to begin aiding members of the Society to collect contested claims, official stationery was printed, with the name of our General Counsel appearing on it, and it was announced through the ILLINOIS MEDICAL JOURNAL that we were prepared to take up their contested claims. It was announced at that time that the physician must be a member in good standing of his County Society.

Quite a good many cases have been referred to us. We have written the companies, occasionally many times, and as far as we have learned the bills have been paid. We have been compelled, at times, to go over the heads of the local agents, and in those instances the bills have been promptly paid and we were assured that it was their desire to cooperate and pay the fees approved by the County Medical Societies.

We believe that this service which is available to all members of our Society should be used more often by the membership, and it is our opinion that within a short time, the insurance companies will cooperate more thoroughly with the Society, and these complaints will be gradually eliminated.

In spite of the fact that some of the companies insist that the physicians' charges are in excess of that approved by the State Compensation law, we wish to state that the State of Illinois does not have a fee schedule governing the charges that can be made for industrial cases, and if the members will charge for their service the fees prevailing in their community the Insurance Companies must pay according to those established tables.

Mr. Rawlings, our General Counsel, has permitted us to use his name on our official stationery, and although we have had no occasion to refer any controversial case to him, we feel that his cooperation will be of material benefit to all of us in the future.

Respectfully submitted,

Geo. Michell, M. D.,
Charles J. Drucek, M. D.,
W. S. Bougher, *Chairman.*

REPORT OF MEDICO-LEGAL COMMITTEE

To the Members of the House of Delegates:

During the year from May 1, 1935, to May 1, 1936, the Committee reports that there have been twenty-seven (27) new suits started and twenty-nine (29) cases disposed of. This compares with thirty-nine (39) new suits started between May 1, 1934, to May 1, 1935, with a disposal of thirty-seven (37) cases during that period.

Of the twenty-seven (27) new suits started during the past year, six (6) have come from down state.

Seventeen (17) claims have been reported during the year, eleven (11) from Cook County and six (6) from down state.

At the present time there are two (2) less cases pending than there were a year ago.

The expenses have decreased during the year.

The class of cases most numerous and most difficult

to defend have been cases of alleged x-ray or radium burns, of alleged improper issuance by physicians of insanity certificates, and the alleged failure on the part of physicians to take x-rays in the first instance or sufficient x-rays for properly checking up in fracture cases.

In many instances where physicians have sued for their fees, counter-claims or set-offs alleging malpractice have been interposed. It has been a quite general, though erroneous opinion among physicians, that where the physician waits until after the expiration of the two-year period of limitation a malpractice counterclaim can not be interposed in a suit for the collection of his bill. Under the Statutes of this State, however, the law is well settled that where a physician sues to recover his fee, a set-off or counterclaim can be interposed alleging malpractice and the physician by instituting suit waives the statutory two-year period of limitation. A defendant may plead a set-off or counterclaim barred by the Statute of Limitations, while held and owned by him to any action, the cause of which was owned by the plaintiff or person under whom he claims before such set-off or counterclaim was so barred. It is the theory of the law on this subject that the defendant or patient is the owner and holder of a cause of action against his physician for negligence or malpractice in the treatment rendered to him by his physician and that when the physician brings an action against his patient for the collection of his fee, such set-off or counterclaim, which was barred by the Statute of Limitations, is no longer barred because the subject matter in the suit for fees and the subject matter forming the basis of the set-off or counterclaim, i. e., the mode or technique of treatment, is the same.

Respectfully submitted,

J. R. Ballinger, M. D., *Chairman*,
R. O. Hawthorne, M. D., *Secretary*,
Oscar Hawkinson, M. D.,
C. U. Collins, M. D.,
A. H. Geiger, M. D.,
Walter Wilhelmj, M. D.

REPORT OF LEGISLATIVE COMMITTEE

To the Members of the House of Delegates:

Medical Aspect of Legislation. The air has vibrated with legislation, reform and uplift agitation since the last annual meeting of the Illinois State Medical Society. A restless, unemployed and troubled people have turned to law making assemblies for relief of every conceivable kind of ill, or alleged ill, whether social, economic, medical, industrial or political. Never before has so much legislation of profound social significance been offered or enacted in the United States within such narrow limits of time.

Baited with rainbow-gold in the form of federal aid, the legislative hook angling for social reform has caught the law-makers of practically every State. Entangled in the national net, the State assemblies have felt almost compelled to fashion State laws after the national pattern woven only too frequently of the fabric of academic theory.

The grist for the legislative mill has been so heavy

that State general assemblies have been called back into extraordinary session time and again. Illinois has found it expedient to hold three extraordinary sessions in addition to the regular session of six months duration. For the greater part of the twelve months since the State Medical Society met in annual convention, the General Assembly has been sitting.

This situation has demanded of the Council of the Society and your Legislative Committee the most painstaking alertness in detecting bills that carried features inimical to public and professional interest from the medical standpoint. Nothing may be taken for granted under such circumstances. Not only do the aims of reformers break new ground but many of the legislators and administrators are inexperienced in governmental matters. Sometimes innocently enough but not infrequently by design a clause or section of far reaching and important significance to the practice of medicine is tucked away in a bill bearing an innocuous title or one that seems foreign to medical matters. Every bill introduced must be read critically in order to meet successfully the issues of importance in medical matters.

A good illustration of the innocent looking bill that carries a clause of significant potentialities is S. B. 18, defeated in the first extra session. Ostensibly concerned with only public welfare matters, a clause in this bill would have placed under the jurisdiction of a county welfare board all public health activities assisted by State financial aid.

With a complete change in the party-political color and with the confusion created by agitation for extending so-called relief to the alleged "forgotten man," the regular session of the General Assembly offered unusually favorable opportunity for medical cults and other minority groups seeking selfish advantage in the medical field. The osteopaths managed to get a bill through the Senate and to third reading in the House. Bills creating a compulsory health insurance system, authorizing corporations to practice medicine, levying a 3 per cent occupational tax on the gross income of physicians and other professional groups, liberalizing the licensure of chiropractors and requiring the annual licensure of physicians were introduced, some of them with strong support. These bills, all of which were inimical to public interest, as well as that of the medical profession, required and had the most painstaking attention of the Medical Society and they were all defeated. This accomplishment incurred a heavy volume of correspondence, a great deal of personal contact with assemblymen and with key people throughout the State, and a lot of study.

While limited in scope each of three special sessions found opportunity of introducing legislation that influenced medical practice either directly or indirectly. Called primarily to straighten out tangles in the emergency relief situation, the first extra session insisted on mixing medical practice and public health service with welfare matters. All measures prejudicial to the best public interest in medical matters were defeated.

The third extra session considered and enacted legislation relating to workmen's compensation and to occu-

pational hazards. These subjects affect intimately the practice of medicine in several specialized fields. As enacted, the bills appear to be an important step forward in establishing a legal basis for handling this perplexing and complicated public health problem. The new laws change the matter of medical service very little but they do establish a much more satisfactory and certainly a more definite basis of relations between employees and employers. They make possible a reasonable program of preventive medicine so far as occupational hazards are concerned.

The second extra session dealt with emergency relief matters that involved little of a medical character.

While medical bills inimical to public interest have been defeated it seems wise to invite the attention of the medical profession to the possibilities which lie ahead. Agitation for compulsory health insurance has not died. It is merely dormant for the moment. While deleted from the national Social Security Act, the Social Security Board is endowed with authority to explore the field and make recommendations to Congress. A Senate Resolution and a House Bill providing health insurance systems have had favorable committee action. Another legislative stampede will undoubtedly follow the November elections in Congress. What Congress does will influence the trend in state legislatures. The medical profession appears to have the advantage for the moment on the compulsory health insurance proposal but it requires vigorous and continued effort to maintain this position.

The osteopathic cause experienced a disgraceful defeat in the British Parliament last summer but the matter will certainly come again before the Illinois Legislature at the next regular session. Success in bringing a bill to the last step of passage last year will not be left as a useless casualty on the battlefield.

The anti-vivisection society has launched a so-called educational campaign preparatory to offering another bill. An effort is on foot to run catechisms in newspapers throughout the State. This points unmistakably toward a superlative effort to throttle medical research through legislation.

Corporations will not take the defeat last year lying down. This menace is sure to arise again.

Deplorable as it may seem, maintaining high standards of medical practice in a State and nation with governments like ours necessitates continual and effective contact with the Legislature. The officers and members of the Council of the Illinois State Medical Society are to be congratulated for having succeeded to an outstanding degree in serving the public and medical profession in this field. The members of the Legislative Committee enjoy the confidence and respect of a large number of legislative leaders. The policy followed by the committee has always been dignified and based upon a sound philosophy grounded in science and built upon a solid foundation of psychological and economic principles. It is essential to maintain this program.

In addition to the help and guidance of the Council, the Legislative Committee wishes to acknowledge the cooperation from the officers of county societies, the

Editor of the Journal, the Secretary of the Educational Committee, and the many physicians who willingly gave their time and effort in support of our legislative program.

Respectfully submitted,
Thomas P. Foley, M. D.,
Mather Pfeifferberger, M. D.,
John R. Neal, M. D., *Chairman*.

REPORT OF MEDICAL EDUCATION AND HOSPITALS COMMITTEE

To the Members of the House of Delegates:
MEDICAL EDUCATION

Methods of Medical Teaching. Two schools of medical pedagogy have long contended for supremacy of their methods of teaching. One insists that the student must learn the minutest details of anatomical structure, biochemical reactions, physiological processes, and clinical manifestations of disease. The other insists with equal fervor that medical teaching should be primarily concerned with imparting general principles buttressed with a sufficient amount of factual detail to make those principles understandable and applicable in the work of treating the sick. The first method is a better preparation for state board examinations; the latter will probably make better practicing physicians. Over a period of years the pendulum of medical teaching swings between these two extremes. At present the tendency is toward the method of teaching general principles.

Graduate Study in Medicine. The number of medical students who are not satisfied with a single year of internship is rapidly increasing. They continue to work in hospitals and medical centers as assistants or associates for three to five years and to do essentially graduate work in some field of medicine. The requirements of the various boards that have been established to pass upon the qualifications of men who wish to enter the various specialties, are responsible for only a part of this trend. The chief stimulus to this type of further study is the recognition by the student of the keenness of the competition he will meet when he actually begins to practice his profession.

The Teaching of Cancer in Medical Schools.—The importance of this subject depends not so much upon the relative frequency of this disease of which there is approximately one case per physician per year in the United States; but upon the facts, that cancer is invariably and inevitably fatal if not properly treated, and that the patient's chances of complete recovery, even when adequately treated, diminish at the rate of about 16 per cent for each month of delay in the institution of treatment. In the Eleventh Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine of Chicago, Dr. Robert B. Greenough discussed "Cancer Education in Medical Schools." This discussion should interest every general practitioner and specialist in Illinois, and his summary is quoted in full. (Proc. Inst. Med. Chicago, March, 1935).

"1. Improvement in the instruction given in the medical school to undergraduates on the subject of cancer is to be desired.

"2. This is to be obtained by improvement of the quality of the instruction rather than by addition to the amount of time devoted to this subject in the curriculum.

"3. The chief defect in cancer instruction in medical schools is the lack of correlation of the instruction given by many different departments in the schools and hospitals.

"4. This defect is best overcome by the organization of cancer clinics for the group study of cancer cases in hospitals, and by their use for teaching undergraduates.

"5. Where cancer clinics are not in existence and cannot be organized in teaching hospitals, an attempt should be made to obtain cooperative and coordinated plans for teaching the subject of cancer from the departments especially concerned in this instruction, i. e., surgery and its specialties, pathology, and radiotherapy.

"6. Every graduate of the medical school should obtain a general knowledge of cancer and in addition he should (a) recognize the supreme importance of early diagnosis, (b) recognize symptoms which indicate even the possibility of the existence of cancer in its more common situations, and (c) know what steps are to be taken with safety to the patient in securing an immediate and positive diagnosis as to the presence of cancer and, if cancer is present, what steps are to be taken to procure the most effective treatment.

"7. The surgeon who desires to make cancer the chief interest of his professional career requires a period of years of preparation of postgraduate study and the actual practice of general surgery. During these years he should pursue the pathological study of cancer in the laboratory to the extent of his opportunities. Some training and experience in radiotherapy should also be acquired. The radiotherapist has the same need for pursuing the practice of his own specialty and should add the pathological training also while making himself familiar with the diagnosis of cancer and its surgical treatment. Only with this experience can he fit himself adequately to join the representatives of the other departments of the hospital in the group study of the patient in the special cancer clinic or the cancer hospital."

HOSPITALS

Improvement in the condition of the hospitals in Illinois during the past year is indicated by the following Table:

	Number		Increase, 1935	
	1934	1935	Actual	%
Hospitals	320	321	1	8.6
Beds—Total	69,926	75,949	6,023	8.6
Beds—Govt. Hosp.	46,276	52,056	5,780	12.5
Beds—Non-Govt. Hosp.	23,650	23,893	243	1.0
Patients admitted—Total	506,392	543,141	36,849	7.1
Patients admitted—Govt. Hosp.	146,315	152,564	6,149	3.5
Patients admitted—Non-Govt. Hosp.	360,877	390,577	29,700	8.2
Average daily occupancy—Total ...	55,688	60,553	4,865	8.8
Average daily occupancy—Govt.	43,833	47,809	3,976	8.9
Average daily occupancy—Non-Govt.	11,855	12,744	889	7.5
Hospitals with Clin. Labs.	254	259	5	2.0
Hosp. Labs. with M. D. Directors.	170	189	19	11.0
Hosp. with X-Ray Depts.	262	266	4	1.5
Hosp. X-Ray depts. with M. D. Director	195	204	9	4.6

There has been a noteworthy increase in the total

number of beds, total patients admitted and in the average daily occupancy. This increase in admissions was much greater in the non-governmental hospitals.

A scheme of hospital insurance is *being promoted* for the Chicago Hospital Council. Under this plan, which is said to be still only tentative, the payment of an annual "premium" of ten dollars insures the client twenty-one days of hospital care with routine laboratory work, nursing service, use of operating room, services of an anesthetist who is an employee of the hospital, without further hospital expense. Because of its potential effect upon the medical profession, the operation of this scheme will be watched with interest.

Respectfully submitted,

W. K. Marshall, M. D.,

H. O. Munson, M. D.

J. P. Simonds, M. D., *Chairman.*

REPORT OF EDUCATIONAL COMMITTEE

April 1, 1935—March 31, 1936

To the Members of the House of Delegates:

There has been a constant increase in the work of the Educational Committee as the public has become conscious of the fact that the Illinois State Medical Society maintains an office to serve them and as medical societies realize that this Committee can be of help in making contacts for them and in promoting county medical organization.

Socialized Medicine. Last spring and summer, plans were made by the Committee to meet the questions of high school and college students who were to debate the subject of socialized medicine. The Committee sent a letter to all high school principals offering to give assistance to debating teams. As requests for material were received, letters were sent to the officers of county medical societies from which counties these requests came. This letter suggested that the local doctors contact personally these students and give them assistance in preparing their briefs.

This plan proved successful and was appreciated as indicated by a letter received from the secretary of one society, who wrote—"I have your announcement of the impending debate on 'State Medicine' to be held in one of our high schools, and in accordance with your suggestion I telephoned to the debating coach this afternoon. He has taken sufficient interest in the matter to arrange to come to my office tomorrow for an interview on the contemplated debate, and I shall use whatever tact and influence I have to get the proper facts before him and the debating audience."

The American Medical Association furnished the Committee with quantities of its publications on the subject of socialized medicine. The special committee of which Doctor E. V. Coleman is chairman supplied some excellent outlines. Mimeographed copies were made of articles appearing in the Medical Economics column and the editorial sections of the ILLINOIS MEDICAL JOURNAL. Copies were also made of radio talks on the subject which had been given by members of the Illinois State Medical Society.

Early in the fall the requests began to come in and

continued through February with the result that about 400 packages of material on socialized medicine were sent to individuals. In March when the individual requests ceased, all of the remaining material was put up in package libraries and sent to 132 public libraries in Illinois.

Copies of Dr. Reed's article "THE SOCIAL SECURITY ACT AND THE DOCTORS" were sent to all libraries in the state, all A. M. A. delegates, all Illinois Legislators, the Health Chairmen of all Parent-Teachers Associations, the Presidents of the clubs belonging to the Illinois Federation of Women's Clubs, and the Public Health Chairmen of the Federation.

The Committee took advantage of every opportunity to bring before the public the doctor's point of view on the subject of socialized medicine. Speakers were scheduled to present the subject before many important groups in the state. A number of excellent radio talks on the subject were presented over Chicago stations.

Speakers Bureau. 465 Health Programs were planned and speakers scheduled for lay meetings through the office of the Educational Committee. In one county, programs were arranged for all high schools and men's service organizations.

The various Posts of the American Legion in Cook County emphasized the subject of *Maternal Health and Welfare* during the last part of April, 1935. The Committee, cooperating with the general chairman of these programs, furnished speakers for some of the meetings and material to doctor members of the Posts who were called upon to present this subject.

The Committee arranged the monthly programs for the Public Health Chairmen of the Chicago District of the Illinois Federation of Women's Clubs. Among the subjects presented by the doctors were "Socialized Medicine," "Arthritis," "Mental Hygiene," "Skin and Cosmetics," which brought information on the food and drug laws, a subject of real interest to club women, "Cancer," "Your Eyes."

Programs were arranged for six Health Institutes sponsored by clubs belonging to the Federation.

Talks were given in several of the largest high schools of the state, the audiences numbering from 350 to 2,000 students.

Series of programs were arranged for Y. M. C. A.'s. Central Y. M. C. A. of Chicago had two health programs per week from October, 1935 through April, 1936, all of which were scheduled by the Educational Committee. The men of the Association selected their own subjects.

Every type of lay organization has made use of the Speakers Bureau. The subject matter of the talks has ranged from information relating to the baby on through old age—physical and mental. The programs have been about equally divided between Cook County and down state.

The Public Health Chairman of the Illinois Federation of Women's Clubs and the Child Hygiene Chairman of the Illinois Congress of Parents and Teachers recommend that clubs and Associations use the Speakers' Bureau of the Illinois State Medical Society.

The Committee makes a very careful check of every

appointment filled and in this way is able to maintain an excellent list of speakers who are prepared to discuss subjects of current interest.

The hundreds of appointments filled were made possible by the splendid interest and cooperation given by members of the Illinois State Medical Society. The many letters of appreciation which come in from lay organizations indicate that the service has met a real need and show that doctors are able to put across these health talks.

Radio. 280 Health Talks were given over radio stations in Chicago during the twelve months. These talks were written and given by members of the Chicago Medical Society, after the material was approved by members of the Committee.

Radio stations used were WBBM, WAAF, WJJD, WGN, WLS, and WENR. The time was given gratis to the Committee.

More than 1500 physicians have been invited to present radio talks for the Committee since 1929. Some have refused, while others have been willing to present several.

Many of the smaller clubs and study groups are using the radio talks as the basis of programs and hundreds of copies of these talks have been sent out.

Copies of the talks given over Chicago stations have been furnished a number of downstate county medical societies who broadcast over their local radio stations.

The Committee cooperated with those in charge of National Hearing Week by having radio broadcasts during that week devoted to the subject of *Deafness*.

During the last few weeks the Committee has tried the dialogue form of broadcast which seems to be meeting with popular approval. That type of broadcast will be developed during the coming months.

Public Libraries. 10,000 Reprints and health educational articles have been sent to Illinois libraries during the year.

1,130 Mimeographed Radio Talks on Child Health and Guidance prepared by members of the Chicago Pediatric Society were sent to Illinois libraries.

Reprints of "Why We Oppose Health Insurance" and Judge McKinley's decision that "A Corporation Cannot Practice Medicine" were sent to libraries.

Fine contact has been made with librarians.

Package Libraries. The Committee compiles reference material for doctors scheduled to address lay groups; no attempt is made to compile strictly scientific material. Hundreds of package libraries were sent out during the year. The Health Chairman of women's clubs in one county asked the Committee to prepare twelve package libraries on health subjects to be used as study material by the smaller clubs of the county during the year.

Up-to-date material was included in every package and the Committee is able to supply a great many helpful suggestions to any doctor asked to present popular health talks.

Cooperation with Special Medical Groups. The Special Societies in Chicago were invited to have their members prepare suitable material for the Educational Committee to use for newspaper release. The response

from the Chicago Pediatric Society was especially fine and a wealth of new material was presented to the Committee by the pediatricians of the state.

Excellent material was also received from the Chicago Orthopedic Society and the Chicago Society of Allergy.

Special hay fever articles were prepared by the Chicago Society of Allergy to combat statements made in the Chicago newspapers. *The Chicago Daily News* also carried a report of the daily pollen count during the hay fever season; this count was given by a member of the Society and appeared in the *News* as coming from the Illinois State Medical Society. The report was published with the daily weather report.

In a desire to cooperate with Doctor Jirka in emphasizing the continued need of diphtheria immunization, the Committee prepared a special article which was sent to 209 newspapers in communities showing the largest number of cases of diphtheria.

The Committee endeavored to cooperate in its Cancer work with the Cancer Committee of the Illinois State Medical Society. Many opportunities have been given members of that Committee to present talks on cancer before lay organizations.

Because the Educational Committee and the Chicago Pediatric Society were able to prepare the material for the BABY BOOK recently published by the State Department of Public Health, letters were sent to the officers of county medical societies calling their attention to this book written by doctors and approved by the Committee.

The Chicago Medical Society has organized a new committee on Mental Hygiene and the Educational Committee has given the members of that Committee opportunity to bring their plans before the laity.

The Committee assisted the women physicians in publicity about their program at the Annual Meeting of the Illinois State Medical Society.

Cooperation has been given and received in abundance from Doctor Jirka and the members of his staff.

Speakers and exhibits have been secured from the American Medical Association and this excellent contribution was appreciated.

Contacts with Lay Organizations. Special health articles were furnished the Chicago Chapter of the American Red Cross and its units.

12 Special Package Libraries compiled for LaSalle Woman's Club.

The Committee was asked to approve and edit the radio talks on HAY FEVER during the summer by the Chicago Woman's Club.

Publicity was given the Cancer programs sponsored by the Chicago Woman's Club.

Cooperation was given the Adult Education Council of Chicago.

Contact was made with the Health Chairmen of the Illinois Business and Professional Women's Clubs and many programs were arranged.

Contact was made with the Public Health Chairman of the Illinois Federation of Women's Clubs and hundreds of Child Hygiene Chairmen and Summer Round-Up Chairmen of the Illinois Congress of Parents and Teachers.

A meeting was held in Chicago in December, sponsored by the Child Hygiene and Summer Round-Up Chairmen of the Illinois Congress of Parents and Teachers. This meeting was for the purpose of introducing representatives of the Illinois State Medical Society and the Dental Society to the health chairmen of the Congress. Doctors R. R. Ferguson and Charles B. Reed represented the Medical Society. This was the first time that such a meeting had been called by the Parent-Teacher Associations.

The Committee cooperated with Central Y. W. C. A. of Chicago in an EYE program. Exhibit material was secured from the American Medical Association.

Contacts were made with the Boy Scouts of America; the Program Service of the Illinois Congress of Parents and Teachers; the Illinois High School Speech League; a number of the districts of the Illinois State Nurses Association; the Illinois Society for the Prevention of Blindness; the Illinois Conference on Social Welfare.

Material on Socialized Medicine was furnished the debating teams of the American Institute of Banking and the American Bar Association.

Home Bureaus of various counties with the supervision of the Extension Department of the University of Illinois continued their project dealing with education on care of the feet and posture. The Committee cooperated by securing orthopedists to give talks before these groups.

A number of programs were arranged for the young people of Hull House, Chicago.

During the last month the Committee planned a program with the Chairman of the Child Welfare Department of the Illinois Branch of the American Legion Auxiliary. The Committee has been invited to furnish short health educational articles to be published in the national magazine of Forty and Eight—"The Hat Box" which goes into 5,000 homes throughout the country. Speakers have been scheduled to address several large district meetings of the Auxiliary of the American Legion.

Service to County Medical Societies. 9,806 Postal Card Announcements and Letters of Invitation were mimeographed for secretaries and sent to members of county medical societies. Counties that used this service were: Perry, Livingston, Franklin, Henry, Randolph, 9th and 10 Councilor Districts, Jefferson-Hamilton, Kankakee, Lee, Whiteside, LaSalle, Bureau.

3,225 Releases were sent to newspapers about meetings of the following medical societies: Chicago Medical Society and its Branches, District Medical Society of Central Illinois, Livingston, Whiteside, LaSalle, Warren, Franklin, St. Mary's Hospital Kankakee, Southern Councilor Meeting, 8th Councilor Meeting, Henry, Jefferson-Hamilton, DeWitt, Madison, Perry, Fulton, Randolph, Lee, Vermilion, McLean.

Woman's Auxiliary. The Committee cooperated with officers of the Woman's Auxiliary. Programs were supplied county auxiliaries; material was furnished; more than 3,000 pieces of mimeographing were prepared.

Newspaper Releases. 8,953 Articles were sent to Illi-

nois Newspapers in addition to those sent out about medical meetings.

Special health articles were prepared by the pediatricians and other specialists and turned over to the Committee for editing and use.

A check was kept on health conditions in different counties. If diphtheria were prevalent in a community, educational articles on that subject were released to the newspapers.

92 New Health Articles were edited and approved by the Committee.

The newspaper is an important means of bringing the story of organized medicine before the public. County medical societies should make use of their local papers. Editors are much interested in the meetings of medical societies.

Scientific Service Committee. The 149 programs scheduled for county medical societies were arranged through the office of the Educational Committee and all of the expenses of the Scientific Service Committee were paid from the funds of the Educational Committee.

The Committee tried to build up good audiences for county medical meetings addressed by speakers from the Scientific Service Committee. Notices were sent to physicians, announcements and stories to newspapers. These notices undoubtedly helped increase attendance at a number of society meetings. A similar service is offered every county society in Illinois.

The Committee. The members of the Committee have given many hours in going over all material released to the public. The loss of the wise counsel of Doctor William D. Chapman is most severe. He had been a member of the Committee respected by all who had the privilege of being associated with him. He gave much time and thought to the work of the Educational Committee, and in promoting the many endeavors which might bring about a fine feeling between organized medicine and organized lay groups.

Respectfully submitted,

R. R. Ferguson, M. D., *Chairman,*

*William D. Chapman, M. D.,

Charles J. Whalen, M. D.,

Charles P. Blair, M. D.,

Otis O. Stanley, M. D.,

James H. Hutton, M. D.,

Jean McArthur, *Secretary.*

*Deceased.

REPORT OF SCIENTIFIC SERVICE COMMITTEE

April 1 1935 to March 31, 1936

To the Members of the House of Delegates:

During the past year the Committee published a revised and augmented list of suggested programs and speakers and forwarded it to the officers of all medical societies in Illinois. This list includes many new names and subjects so that we are now in a position to handle all requests for scientific programs.

In addition, the Committee has formulated and devised new and original programs; thus, for example, the subject of arthritis was presented by a man who has done

research work in this field during the past few years and recently published a report of his findings.

Another innovation instituted this year which has proven popular and successful is clinics for the county societies. During the past year there were held two crippled children's clinics, three gynecological clinics, three heart clinics and one pediatrics conference. These teaching clinics have great possibilities and can, in effect, serve as real postgraduate instruction to county medical societies and should, in the opinion of the Committee, be developed. Where they have been tried as an afternoon clinic, a dinner and an evening devoted to scientific papers or talks, they have proven very practical. The medical schools and individual teachers have expressed their willingness to make up teams and through the Committee, service the county societies. It is the conviction of the Committee that these clinics are valuable also in increasing the attendance at Society meetings.

The Educational Committee assisted the Scientific Service Committee and through it the county societies in promoting their scientific programs through newspaper publicity. Special articles concerning the meetings were sent to all editors in the section of the state concerned.

Following is a detailed classification of programs arranged by the Scientific Service Committee along with the names of county societies serviced:

1. Subjects:	
Allergy	7
Arthritis	4
Cancer	3
Cardiovascular Disease...	18
Dermatology	6
Diet	2
Endocrinology	4
Eye, Ear, Nose and Throat	3
Gastro-Intestinal	7
Gynecology and Obstetrics	12
Internal Medicine	7
Medical Organization and Economics	8
Neurology	5
Orthopedics	7
Pediatrics	14
Pneumonia	8
Surgery	7
Tuberculosis	6
Venereal Disease	1
Urology	9
X-Ray	1
2. County societies serviced and number of speakers furnished:	
Aurora Medical Society..	1
Belleville Branch, St. Clair Society	2
Bureau	5
Champaign	3
Crawford	2
Carroll	2
Christian	2
DeWitt	2
Decatur	2
DeKalb	2
Elmhurst Hospital	1
Fulton	6
Gary, Indiana	1
Henry	5
Iroquois	3
Iowa and Illinois Central Dist.	1
Jo Daviess	1
Jefferson-Hamilton	3
Kankakee	2
Knox	1
Lake	2
La Salle	10
Livingston	1
Logan	1
McHenry	6
Melrose Park	1
Mississippi Valley.....	1
McLean	2
McDonough	1
Peoria City	2
Perry	2
Pike	2
Paris Hospital	1
Rock Island	3
Scott County, Iowa	6
Sherman Hospital, Elgin.	3
St. Clair	1
Sangamon	3
Shelby	2
Southern Illinois	1
St. Joseph's, Elgin.....	2
Union	2
Vermilion	3
Whiteside	3
Will-Grundy	24
Winnebago	1
Woodford	1
9th and 10th Councilor Dists.	4

Respectfully submitted,

Robert S. Berghoff, M. D., *Chairman.*

REPORT OF MEDICAL ECONOMICS COMMITTEE

To the Members of the House of Delegates:

While the Committee on Medical Economics has no voluminous report to make this year, they have had one of the busiest years since the committee was formed. The changes in the committee at the beginning of the year due to inability of some of the former members to continue their work, have worked out very satisfactorily. The new members have supplied an enthusiasm common to new members and so necessary to the successful work of any group. Each member of the committee has furnished the Column with an article on some phase of the subject of medical economics and each has been of great interest. Different methods of approach of the main subject has resulted in avoidance of the dangers of repetition as well as over-emphasis of some particular phase of the subject on which the essayist is particularly interested.

This year the Committee has not spent time and energy in getting out questionnaires and then tabulating the information so received. This has been omitted because of the great amount of labor involved and the limited amount of interest on the part of the medical profession with a resulting doubt as to the actual good resulting therefrom. We feel that we have enough information on the subject of medical economics to refute the claims of the proponents of change in the manner of conducting the practice of medicine and in addition can present enough constructive information to convince the most skeptical on the efficacy of medicine as practiced in the United States. With such a source of information, the problem has become one of awakening the medical profession to the dangers confronting them and trying to get them to prepare themselves to enlighten the laity on the subject. With the aid of the Committee on Education, this educational campaign has been continued throughout the year, and in practically every medical Society in the State there has been a meeting or two given over to the presentation of the salient facts in the matter to the medical profession by one or more of the men in the profession, who has made a special study of the subject. The entire Council as well as many men outside thereof have given liberally of their time and energy to make a success of this work.

With such an intensive campaign of education of the medical profession well under way, the extension of our campaign to the laity has been started. The number of men in the profession who have signified their interest in the campaign has been most encouraging. At no time has there been a lack of available speakers, even though at times it has seemed to the committee some of the men have done a little more than their share. The demand from Rotary Clubs, Kiwanis Clubs, Lion Clubs, Optimists, Parent-Teachers Associations, Womens Clubs, Business and Professional Womens Clubs in this subject has been most encouraging. They have been most interested listeners with open minds on this controversial subject. Their questions have shown that they have given thought to the subject and want to make their own decision as to the need for changes

in the United States. This field of addressing lay audiences is apparently inexhaustible. We have just begun to scratch the surface of this field and the demand for speakers should continue for many years. With the co-operation of the members of the Council and Miss McArthur, a list of available speakers for every part of the State is on file at the office of the Secretary of the Educational Committee in Chicago and any physician interested in the subject can get the necessary information to prepare a talk on this subject and there will always be work for the men who are prepared.

There are several subjects on which a report has been made in past years, which were and in some instances still are in the classification of unfinished business. We will review some of these at this time, making any additional information available.

The subject of *Group Hospitalization* continues to be of great interest. At frequent intervals the imminence of the starting of the plan in Chicago is announced in some of the Chicago papers. However, as far as the Committee knows the plan is not in actual operation there, although the latest news is that its commencement is merely a matter of time. The reports from other cities such as New York are as yet too meager to allow any definite opinion as to the success or failure of the plan in large cities. That the plan will work in smaller communities, particularly the industrial ones, has been pretty conclusively proved, although the time is too short to see what will be the result in case of epidemic or disaster striking a community. We still feel that the subject is far from settled and that any further action by the Illinois State Medical Society is inadvisable at this time.

There has been little or no action taken on the subject of *Contract Practice*, which continues to be one of the chief causes of irritation and misunderstanding between medical practitioners. This problem is so complicated and each case is so individual that it is impossible to lay down set rules for consideration. Usually further complicating the problem is personal and professional feeling between those participating in the contract work and those who are not. Surely if there is any place in the practice of medicine where the principles of the Golden Rule should be in active operation it is the conduct of Contract Practice. It would seem advisable that time and attention be given to this subject by the officers of the component County Societies in arranging the programs for the coming year and it is to be hoped that attention will be given in the program of the annual meeting to this subject.

The question of the care of the indigent while not definitely the concern of this Committee is so inter-related to the Economic problem that a few words on the subject at this time may not be amiss. With the cessation of the Illinois Emergency Relief Commission on May 1, the entire question of the care of the indigent is dumped back in the lap of the County Relief Board, which at this time is under the supervision of the County Board of Supervisors. It is generally admitted that these Boards are inadequately prepared both as to personnel and finances to assume this care. If

there is to be a financial crisis, we may rest assured that the first group to feel the pinch and to be asked to help will be the medical profession. This is no new departure, but wholly in line with past experiences. However, there is no reason for the cost of medical care to be borne by the medical profession when other equally necessary goods, such as food, clothing, and homes are furnished. The beginning of such a plan is the time for the medical profession to assert itself and insist on proper consideration by the Board. The fact that the County Board of Supervisors is anxious to return the care of the indigent to a Township responsibility is encouraging, for years of experience and amicable relationship between the medical profession and the local Supervisor has led to a workable plan being evolved in every community. It is to be hoped that such a relationship will be worked out regardless of whether the responsibility becomes one of the county or township authorities. But eternal vigilance and activity is needed to protect the medical profession.

The present calm in the reform movement should not lull the medical profession into any false sense of safety. A breathing spell of undetermined duration was promised the business world. Naturally at this time, just a few months before a national election, the same breathing spell is being given the reform measures, but once the election is over there is the more than probable danger of the emerging of the reform professors from temporary relative obscurity with another batch of plans, which have hatched during the period of hibernation. The only hope for the medical profession, with its allied dental and nursing professions is to remain alert and militant. They must guard diligently the rights they now have and see that those elected are at least not opposed to those things which are considered to be for the good of the medical profession. Surely with every other group interested in politics there can be no criticism of the medical profession taking an active interest therein as long as it remains nonpartisan and works in the open, using reputable and honest methods.

We insist this year as last that the future of the medical profession is to be decided in the next few years and since we know the problems and the dangers, we are the best capable of leading the laity in the proper direction. No man should be too busy, too old or too young to be uninterested in the final solution of the question and he should give of his time and ability as opportunity is afforded him, so that when the final decision is arrived at he can look back and truthfully say that he has fought a good fight and kept the faith. Any other course will result in regret when the final analysis is made and the accounting rendered.

The Committee wishes to thank all members of the profession who have so kindly assisted them in the past year, particularly the Educational Committee, the Editor and the Council. Without their assistance and support, we would have accomplished much less than the small amount we have. We realize that much work remains to be done and hope that we have aroused the medical profession of Illinois so that they are thinking about the problems of the medical profession. If this

has been accomplished, we feel repaid for the time and the energy expended. The Chairman wants especially to thank the members of the Committee as well as the officers of the Illinois State Medical Society for their cooperation. We trust that the Chairman for the coming year will receive the same or greater support and that the progress in the next year will be at least as great as in the past two.

Respectfully submitted,

C. G. Farnum, M. D.,
R. K. Packard, M. D.,
C. S. Skaggs, M. D.,
J. S. Templeton, M. D.,
C. E. Wilkinson, M. D.,
E. S. Hamilton, M. D., *Chairman.*

REPORT OF VETERANS' SERVICE COMMITTEE

To the Members of the House of Delegates:

Your committee is pleased to report a year of some progress. One matter that required investigation was the immunization program of the "Forty and Eight." It was learned that the program was one largely educational and through Health Department channels.

One other matter of medical importance was brought to the attention of your committee. A letter from Grover Sexton addressed to the American Medical Association was referred to your chairman and in turn referred to the Veterans' Service Committee of the Chicago Medical Society, Dr. Maurice Blatt, Chairman.

In the letter, Mr. Sexton outlined a plan whereby immunization, etc., might be carried out by using hospitals as units, the internes doing the work. Your chairman together with the Veterans' Service Committee of the Chicago Medical Society met with Mr. Sexton for further elucidation of his plan. After a lengthy discussion the Committee explained to Mr. Sexton that internes were fifth year medical students and not licensed to practice medicine, that the interne service changed frequently, and that it would also necessitate the use of hospital supplies, and also that the interne's time belongs to the hospital. It was also explained to Mr. Sexton that there is in the Legion an organization called the "Medical Commission" composed of Post District and County surgeons about two hundred in number who study these medical problems. It was suggested to Mr. Sexton that such problems as the care of indigent veterans should be taken up with the Post Surgeon or in the case of children with the child welfare commission, Dr. Charles Schott, Chairman. It was further explained to him that upon this group of physicians should fall the burden of arranging medical care for the group in which he is interested.

Mr. Sexton agreed to this suggestion.

Respectfully submitted,

H. J. Way, M. D.,
John M. Hayes, M. D.,
John S. Nagel, M. D.,
F. G. Norbury M. D.,
T. B. Williamson, M. D.,
F. O. Fredrickson, M. D., *Chairman.*

REPORT OF MEDICAL ADVISORY COMMITTEE TO ILLINOIS EMERGENCY RELIEF COMMISSION

To the Members of the House of Delegates:

Relief associated with the general economic situation continues to be a major industry in Illinois as well as in the nation at large. Due to change in the federal policy which substituted employment under WPA for direct relief payments, the number of families carried on the relief rolls in Illinois in January of 1936 was only 190,887 compared with 316,283 in January of 1935, and the total amount expended for relief was \$5,434,007.05 and \$12,788,563.72 for each of the two months respectively. The relief load and expenditures for intermediate months varied somewhat but declined radically between December 1935 and January, 1936, because of the effect of the WPA program. The relief load declined substantially between January and April of 1936.

About 15% of the persons on relief are provided with medical care during the course of a month and the amount of money spent for this purpose varies between 4% and 6% of the total expenditures for relief. For December, 1934, for example, the amount paid for medical service was \$315,232.30, or 4.1% of the total cost of governmental relief in that month, while in December, 1935, it was \$292,435.95, or 5.1%, and \$267,343.54, or 5.6% in January, 1936. The proportionately higher sums for medical service in the smaller relief load results from the fact that able-bodied persons were absorbed by the WPA program.

The details of this report are presented in two parts. The first submitted by Dr. Charles H. Phifer, chairman of the local Advisory Committee, relates to Cook County and the second to Down-State. This seemed advisable since the general medical Advisory Committee functioned in two units although the policies pursued were basically the same.

PART ONE

REPORT OF THE ADVISORY COMMITTEE OF THE CHICAGO MEDICAL SOCIETY ON THE MEDICAL CARE OF THE INDIGENT AND RECIPIENTS OF UNEMPLOYMENT RELIEF FEBRUARY, 1936.

The future of the relief situation in the State of Illinois is rather critical at the present time and demands some serious thinking on the part of all its citizens.

Our Legislature recently passed laws setting up some provision for the care of the aged, the details of which are not as yet complete, but it made no provision for the care of the blind nor dependents under the age of 16. Each of these are items of great interest in Cook County.

The funds arising from the sales tax do not provide sufficient money to carry the present load of indigent and unemployed. There is, likewise, every evidence that the assignment of this group to WPA projects has not furnished the necessary relief, nor has it relieved the State of its financial responsibility. It is the opinion of those informed that there is good reason to believe that we will again be compelled to admit to the relief rolls most of these people now on WPA projects. These

continued heavy demands will require the Legislature to supply more funds.

The State Legislature some weeks ago voted to terminate the power of the Illinois Emergency Relief Commission as of May 1, 1936. It did not, however, destroy the Commission. Likewise, it forgot to take cognizance of how the funds arising from the sales tax should be allocated for the care of the indigent and unemployed after that time.

Mr. Leo M. Lyons, Executive Secretary of the Illinois Emergency Relief Commission, and Mr. Scott, State Administrator of Relief, met with the State Advisory Committee on March 9. Mr. Lyons presented to us many of the numerous problems in connection with the present situation. As a member of the State Committee, I asked him to submit to me these statements in writing, and I am herewith including a copy of his correspondence for your information.

March 10, 1936.

Dr. Charles H. Phifer, Chairman,
Advisory Committee, Chicago Medical Society,
Chicago, Illinois.

Dear Doctor Phifer:

"Confirming my conversation with you and the Committee yesterday noon and in order that you may be properly informed as to the present relief situation, I would like to point out the following:

"1. Present legislation provides that the responsibility of the Illinois Emergency Relief Commission as it relates to the administration of relief in the State of Illinois will terminate as of May 1, 1936.

"2. Under the present law, the responsibility for relief administration from May 1 to July 1, 1936, will rest with the County Board of Supervisors in the various counties of the State.

"3. Subsequent to July 1, 1936, the responsibility for the relief administration will shift from the County Boards of Supervisors to the Supervisors of each township in the State.

"4. Present legislation also provides that there shall be a levy for poor relief in each county or township at the rate of not less than 30c. per \$100, and that after September, such counties as have not levied and anticipated against the levy shall not participate in the state money which might be allocated.

"5. There is now before the Senate, the bill having been passed by the House, a bill which provides that beginning May 1 the responsibility, for allocating such State money as might be available, rests with the State Auditor of Public Accounts, the allocation to be released by the Auditor upon certification by the Illinois Emergency Relief Commission, this certification to be based on the needs of the county and upon requests made by the various counties of the State.

"6. It is understood at present that further consideration to this problem will not be given by the General Assembly until after April 21. This allows a period of nine days from the time that this matter is again considered until the termination of the responsibility by the Illinois Emergency Relief Commission.

"I am bringing this matter to your attention at this

time as it seems only fitting that with the years of splendid service which the medical profession of the State has given to this program, that every possible effort should be made to preserve the valuable practices and policies which have been developed during that period of time.

"Needless to say I am much concerned about the muddled state of affairs, but I am much more concerned about the welfare of those persons who, because of unemployment, find it necessary to seek assistance through some public agency. I am concerned that during this period of uncertainty and adjustment that it not be necessary for various counties of the State to revert to the antiquated practice of giving medical attention to unfortunate families on a contract basis.

"I am fearful also in the event such a program is developed that it will be necessary for a considerable number of physicians to apply for relief for subsistence. It may be true that the present program of administering medical care is somewhat more costly than by contract, however, I feel that the care given relief clients and the client-physician relationship which is maintained by the physicians, more than offset the savings that might be made through some other plan.

"I am bringing this matter to your attention at this time, which is approximately seven weeks before the termination of Illinois Emergency Relief Commission responsibility, in order that you may have the opportunity of discussing this matter with fellow members of your profession and that they in turn might endeavor to preserve those practices which have been valuable during this period."

Very truly yours,

(Signed) Leo M. Lyons,
Executive Secretary.

The members of your State and Local Advisory Committees are of the opinion that the Illinois Emergency Relief Commission has contributed many valuable additions to the care of the indigent and unemployed. We are sure that among these none is greater than the supervision of their health and the direction of the medical care for this group by Organized Medicine as provided under the Illinois Plan.

Your Committee believes that in this project these people have been furnished the best type of medical care that they have ever had in this State. We hope that plans may be maintained whereby each individual physician may still be privileged to render medical service to his client and to receive compensation for same.

It is also the belief of your Committee that the question of relief in this State is still one of an emergency. We likewise believe that the Illinois Emergency Relief Commission, with its valuable program, should be preserved intact while this emergency exists. To this end we implore the support, concerted and immediate action of all the members of the medical profession, to use their personal contacts and their civic organizations to help bring to the attention of the members of the legislature the value of the work that has been accomplished,

likewise the necessity of continuing this project until this emergency has passed.

We wish to submit the following payroll for Cook County for the month of February, 1936:

Physicians applications approved	6
Physicians resigned	6
Physicians suspended temporarily	2
Physicians reinstated	1
Total number of physicians suspended (as of 2-29-36) ..	54
Total number of physicians at present under suspension ..	9
Total number of physicians registered (as of 2-29-36) ..	2,681
Physicians rendering service in February	1,834
Authorizations issued in February	32,035
Rotating calls issued in February	739

VISITS:

Home—28,889	\$44,113.50
Office—2,995	2,995.00

\$47,108.50

OBSTETRICAL CARE:

Number of Cases—180	\$ 3,062.00
Work Relief Injuries	25.00

Total Payroll	\$50,195.50
Total Payroll for 23 months (April, 1934 to February, 1936, inclusive)	\$1,029,850.33

Respectfully submitted,

James H. Hutton, M. D.,
Guy M. Cushing, M. D.,
Joseph K. Narat, M. D.,
Julius H. Hess, M. D.,
Charles H. Phifer, M. D., *Chairman.*

PART TWO

The execution of medical relief has been more satisfactory in Illinois than in most states. This resulted principally from the development of a sound, workable policy at the outset and of strict adherence to that policy as time went on. The irritating although not particularly serious difficulties encountered in the beginning while the system was being established, smoothed out as the profession and relief administrators profited by experience. A sympathetic, cooperative and reasonable attitude on the part of the Advisory Committee members and representatives of the Emergency Relief Commission made it possible to establish a general policy while the energetic efficiency of the county medical advisory committees crystallized the policy into practical operation.

It is particularly pleasing to report that the confidential relations between patient and physician, a fundamental principle in medical service of whatever character, has been maintained in the relief program. While the future of government relief policies and programs is clothed with uncertainty, this principle of patient-physician relation has been established and can be maintained if the medical profession is alert when changes are contemplated.

The outlook now is that important changes will take place at the end of June in the general plan of governmental relief grants. The federal government has withdrawn already from the practice of granting funds for direct relief payments. The state undertook to carry the load but passed a law terminating on May first its administrative function. Later that law was repealed by another which continued the life of the Emergency

Relief Commission until July first. At this writing the matter still stands that way.

The trend of thought now is toward transferring all administrative procedures to counties. It is anticipated, however, that the State will continue to appropriate funds, turning over the money to county authorities. Schemes bearing upon this situation are under consideration by the Legislature which is sitting in extraordinary session.

A return to the county system of poor relief opens up afresh the danger of bringing back into prominence the county doctor. The DeWitt County board of supervisors recently executed a contract with a physician to handle the medical load of county charges. This practice is fair neither to the poor, nor to the citizens, nor to the profession. Under circumstances like those which now prevail and which seem destined to continue indefinitely, no doctor can render efficient satisfactory medical service to the number of patients found among those on the relief rolls in any but a few counties.

It is suggested that county societies work out plans which meet the needs in each county. To be acceptable a plan must bring into consideration the available resources and balance these judiciously against the anticipated medical load. In Kankakee County the medical society has undertaken to provide through its membership all necessary medical services for the indigent in the county. The Society and County Board are parties to a contract. Similar arrangements have worked out satisfactorily in several Iowa counties. This scheme spreads the medical load so that no physician is overburdened and the patients enjoy the privilege of some choice.

Other factors that complicate the situation are the pension unemployment insurance and various assistant schemes embraced in the federal Social Security Act. One title of this Act provides old age pensions. Another provides for unemployment insurance. Others make provisions for granting aid to dependent children, for extending medical and hospital care to crippled children, for enlarging child welfare programs, for promoting maternal and child health and for strengthening public health service.

Except for the last two items the policies with respect to the inevitable medical services which these schemes will involve are by no means clear. Illinois has enacted an old age pension law that is now in effect but federal participation has not taken place. None of the other pension or aid schemes are yet effective in Illinois. It will be necessary to observe developments carefully with respect to medical problems which are sure to arise. Past experience indicates that situations which may arise can be met successfully and satisfactorily through the State and local advisory committees. It would seem wise, therefore, to preserve this machinery regardless of the turn of events with respect to the existing relief program.

This is the opinion of H. P. Scott, State Director of Medical and Dental Relief. In anticipating a change he says:

"I hope some way may be found by which we may

continue the relationships we have built up with the doctors in handling this medical program. I am quite sure we have demonstrated to the doctors that there is a sound, ethical, cooperative way of giving medical relief such as we do and still retain the respect of the profession."

He adds further that "in my contacts over the State, I have been impressed with the willingness of doctors to cooperate with this program, medical care to the indigent, and I have also been impressed with the apparent willingness to give more attention to public health problems with which our administrations are confronted. In many places, I have found the doctors very appreciative of the understanding and cooperation which has been shown them on the part of our nurses and others engaged in this work."

Detailed data on the amount of money spent for medical services to families on relief are not available as this report is written. During the twelve months ended with February, 1936, however, a total of \$103,713,259.04 was expended in Illinois for unemployment relief. Assuming that 5% of this amount went for medical services it appears that the sum expended for this purpose was approximately \$5,185,000.00. This estimated figure includes both the Cook County and down-State.

The down-State figures for the first three months of 1936 are as follows:

	Relief Case Load	Medical and Dental Service	Total Cost	Average Per Patient
January	73,921	8,979	\$48,986.33	\$5.46
February	70,340	8,391	45,160.96	5.38
March	65,636	8,506	48,081.77	5.65

In scanning these figures it must be borne in mind that the relief load has been greatly reduced since December of 1935 by transferring many people from straight relief to employment in WPA projects.

It may be emphasized in closing that satisfaction or the lack of it in the practical working of medical relief depends in no small measure upon the attitude and the functioning of the County Medical Advisory Committees. How well these committees function, depends, in turn, upon the interest displayed and the attitudes of the County Societies. The general policies established by the State Advisory Committee appear to be sound and practicable, offering the best method of meeting what is at best a difficult situation.

Respectfully submitted,

Philip H. Kreuscher, M. D.,
Harold M. Camp, M. D.,
E. C. Cook, M. D.,
S. E. Munson, M. D.,
Chas. H. Phifer, M. D.,
Julius H. Hess, M. D.,
John R. Neal, M. D., *Chairman.*

REPORT OF COMMITTEE ON SOCIAL SECURITY PROBLEMS

To the Members of the House of Delegates:

The Committee on Social Problems has had no formal meetings during the past year but a considerable amount of business has been transacted by mail. During the past

year the plans of a year ago have been carried out to a rather satisfactory degree. A fairly considerable number of outlines have been prepared for use among our members to aid in preparing addresses before lay audiences. These have been given to Miss McArthur who has in turn sent copies wherever needed. Several of the important addresses of our officers have been abstracted for use in the same way and we have not hesitated to plagiarize the material in Dr. Whalen's editorials. We are of the opinion that if these editorials had been read consistently by our membership throughout the past few years, a committee of this sort would not be needed. But as it is we have endeavored to furnish material of a type that we thought might do the most good.

Respectfully submitted,
E. P. Coleman, M. D., *Chairman.*

REPORT OF SCIENTIFIC EXHIBITS COMMITTEE

To the Members of the House of Delegates:

The first work of your committee was exhibited at Rockford last year. We were very proud of the exhibits and they were studiously viewed by many attending the convention. We hope we have succeeded in the effort this year to make the scientific exhibit better in every respect.

We have more exhibitors and feel sure that there are some better than last year, even though there is no criticism whatever to those shown at that time.

We submit the following list of exhibitors and urge you to look them over, for we feel sure you will find something of interest and value to every physician.

The list is as follows:

1. Illinois Department of Public Health, Springfield.
2. Health and Educational Exhibit. Illinois State Planning Commission, Robert Kingery, Chairman, Henry L. Kellogg, State Planning Engineer; State of Illinois, Governor Henry Horner, Springfield.
3. The Medical Library of the Sangamon County Medical Society, Springfield.
4. Demonstration of Collapse Therapy in Pulmonary Tuberculosis. Chicago Municipal Tuberculosis Sanitarium, Chicago.
5. Electrosurgical Obliteration of the Gallbladder. Dr. Max Thorek, Surgical Service of Cook County Hospital and American Hospital, Chicago.
6. Renal Stone. Frederick Lieberthal. From the Department of Genito-Urinary Surgery of the Northwestern University Medical School, Chicago.
7. Clinical and Experimental Studies in Cerebrospinal Fluid. Abraham Levinson and David S. Cohn, Michael Reese Hospital, Chicago.
8. Indications for Peroral Endoscopy. Correlation of the Endoscopic View with the Roentgen Picture. Paul H. Holinger, Bronchoscopic Clinics of Research and Educational Hospital, U. of I.; St. Luke's Hospital; Children's Memorial Hospital, Chicago.
9. Neuropsychiatric Relationships to General Medicine. Groves Blake Smith, M. D., Godfrey, Illinois.
10. Constitution and Cancer. American Society for

the Control of Cancer, 1250 6th Avenue, New York City, New York.

11. Frank E. Simpson Institute of Radium Therapy. Frank E. Simpson, M. D., Chicago.

12. Electric Stethoscope and Stethograph. Joseph K. Narat, M. D., Chicago.

13. Radiographic Study of Anatomy. Harold O. Mahoney, Northwestern Medical School, Chicago.

14. Effect of Metabolic Disturbances on Teeth. I. Schour; A. G. Brodie, University of Illinois College of Dentistry, Chicago.

15. Edema and Blood Pressure as Influenced by Minerals. M. Herbert Barker, M. D., Renal Clinic Northwestern University Medical School, Chicago.

16. The Infant's Stool—Flora and Chemical Constituents as affected by Feedings. Jesse R. Gerstley, Katharine Howell, David S. Cohn, Michael Reese Hospital, Chicago.

17. Permanent Identification of the New Born—Classifiable Palm Prints. Gilbert P. Pond, M. D., West Suburban Hospital, Oak Park, Illinois.

18. The Pigmentations of the Skin Including Neoplasms—Melanin, blood pigment, arsenic, silver, bismuth, mercury. S. William Becker, M. D., Section of Dermatology, University of Chicago, Chicago.

19. Sweat—Physiological and Biochemical Studies. Theodore Cornbleet, E. R. Pace, and H. C. Schorr, University of Illinois Medical School, Chicago.

20. Tumors of the Skin. Erwin P. Zeisler, Northwestern University Medical School, Department of Dermatology, Chicago.

21. Cutaneous Manifestations of Syphilis—Clinical and Histopathologic. Clark W. Finnerud, M. D., Representative for the Scientific Exhibit Committee of the Section on Dermatology and Syphilology of the American Medical Association, Rush Medical College, the University of Chicago, Chicago.

22. Vitamin C—Cevitamic Acid. Arthur F. Abt, Northwestern University Medical School, Chicago.

23. The Incidence of Atherosclerosis. N. S. Davis, III, M. D., F. A. C. P., Department of Pathology, Northwestern University Medical School, Chicago.

24. Diabetic Coma, its Prevention and Treatment. R. T. Woodyatt, Chicago.

25. Glands of Internal Secretion. W. O. Thompson, Arthur Dean Bevan, N. J. Heckel, P. K. Thompson, and S. G. Taylor, III, Rush Medical College; Presbyterian and Cook County Hospitals, Chicago.

26. The Diagnosis and Management of Upper Abdominal Problems. J. Donald Milligan, M. D., Pelton Clinic of Elgin, Elgin, Illinois.

27. First Aid in Eye Injuries. Thomas D. Allen and Glenway W. Nethercut, Illinois Eye and Ear Infirmary, Chicago.

28. Pathology of Amebiasis. R. H. Jaffe, M. D., Department of Pathology, Cook County Hospital and Cook County Graduate School of Medicine, Chicago.

29. The Nephrotic State. Harold C. Lueth, Department of Medicine, University of Illinois College of Medicine, Chicago.

30. Carcinoma of Colon and Rectum. M. H.

Streicher, M. D., University of Illinois College of Medicine, Chicago.

31. Treatment of Pneumonia. Robert W. Keeton, M. D., University of Illinois School of Medicine, Chicago.

32. The Leucopenic Index in Allergy. Michael Zeller, M. D., Chicago, Illinois.

33. Illinois Pharmaceutical Association. H. H. Zorn, President, I. Ph. A., and O. U. Sisson, Chairman, U. S. P. and N. F. Committee, Chicago.

34. Interesting Bone Lesions, L. M. Hilt, Radiologist and F. W. Light, Pathologist, St. John's Hospital (Clinical Laboratory), Springfield, Illinois.

Respectfully submitted.

J. S. Templeton, M. D., *Chairman*,
N. S. Davis, III., *Secretary*.

REPORT OF COMMITTEE ON CANCER

To the Members of the House of Delegates:

1. At the May, 1935, meeting of the House of Delegates of the Illinois State Medical Society your Committee on Cancer submitted a report in which it was recommended that an invitation be extended to the American Society for the Control of Cancer to make a survey of the cancer incidence and facilities available for its diagnosis and treatment in the State of Illinois. The Council of your Society approved this suggestion and extended such an invitation to the American Society for the Control of Cancer, which organization accepted the invitation. It was planned that such a survey would commence early in 1936, but the illness of the field representative of the American Society for the Control of Cancer has made necessary a postponement of this survey which it is now hoped will be accomplished within the next few months.

2. Your Committee urged the presentation of cancer programs at the meetings of the Illinois State Medical Society and its constituent County Medical Societies. A considerable number of such programs have been presented during the year, and it is recommended that the presentation of such programs be further encouraged during the following year.

3. An offer of cooperation to the Educational Committee of the Society and to such other committees as may have an interest in cancer was extended. Individual members of the Committee on Cancer have cooperated rather extensively with the other committees dealing with cancer. The Committee on Medical Education and Hospitals of your Society has carried on effective work during the year in relation to the cancer problem in hospitals, and we are informed that a review of this work will be incorporated in the report of that Committee. We would be glad to continue such cooperation.

4. It was suggested in our previous report that active work upon the formation of cancer clinics in the State of Illinois be delayed until such time as the report of the survey of present available facilities was furnished by the American Society for the Control of Cancer. Unless exceptional circumstances arise where the advisability of the formation of such a clinic in a spe-

cific community or hospital be unquestionable we recommend the continuation of this policy.

Respectfully submitted,

J. P. Simonds, M. D.,
R. H. Jaffe, M. D.,
M. G. Bohrod, M. D.,
E. G. C. Williams, M. D.,
Bowman C. Crowell, M. D., *Chairman*.

REPORT OF COMMITTEE ON CORPORATION PRACTICE

To the Members of the House of Delegates:

The special committee of the Council of the Illinois State Medical Society having in charge the matter of the legality of the practice of medicine by corporations makes the following report:

The Committee requested the Attorney General of Illinois, the Honorable Otto Kerner, to institute proper legal proceedings against the United Medical Service, Inc., of Chicago, Illinois, to show by what right or authority it was practicing medicine. The committee tendered the services of Attorney Harry Eugene Kelly as special assistant Attorney General and a Quo Warranto action was brought in the Superior Court of Cook County before Judge M. L. McKinley who held that no corporation can practice medicine under the Illinois medical practice act. The corporation appealed the decision to the Illinois Supreme Court and this highest court of the State affirmed the decision. This far-reaching decision is binding upon all lower courts, thus the specific object for which this special committee was appointed has been accomplished. This decision secured through the efforts of the Illinois State Medical Society has been widely acclaimed as a great victory over commercialized quackery in its attempt to invade the practice of medicine. The language of the lower court specifically includes corporation "Not for Profit" and the Supreme Court concludes its unanimous decision with these words, "The Judgment of the Superior Court is right. And it is therefore affirmed."

Respectfully submitted,

Chas. E. Humiston, M. D., *Chairman*.

REPORT OF COMMITTEE ON REVISION OF CONSTITUTION AND BY-LAWS

To the Members of the House of Delegates:

The Special Committee on Constitution and By-Laws has completed the revision of the Code for which it was appointed last year.

The basic ordinance has been carefully studied. Corrections have been made, all recent regulations have been introduced in their appropriate places and some additions provided. The newly arranged material has been mimeographed in the office of the Secretary and submitted to the Council for approval.

Respectfully submitted,

H. M. Camp, M. D.,
Rollo K. Packard, M. D.,
Charles B. Reed, M. D., *Chairman*.

REPORT OF COMMITTEE ON PHYSICAL THERAPY

To the Members of the House of Delegates:

I beg to report that after a questionnaire sent to practically all the medical schools which students from Illinois attend, we find that they give no uniform course of instructions in physical therapy.

Some schools give no course at all, some but very little, and some quite extensive. In some schools it is optional, and in some it is compulsory.

I have met with some members of the committee and other physicians who are intensely interested in physical therapy, and it is our opinion that there is a great lack of knowledge among the ordinary physicians concerning the good that can be derived from physical therapy measures when scientifically applied.

It is also our opinion that much valuable information could be disseminated if the medical societies would occasionally have some physician appear on their program who is qualified to discuss physical therapy measures.

Respectfully submitted,
Andy Hall, M. D., *Chairman*.

REPORT OF THE EDITOR

To the Members of the House of Delegates:

With the United States of America facing the most critical election,—and in very truth, the most drastic national peril that has existed since the pealing of the Liberty Bell—the editor of the ILLINOIS MEDICAL JOURNAL rejoices to report another year of staunch Americanism on the part of the official organ of The Illinois State Medical Society.

The extraordinarily excellent functioning of the newly installed and ably conducted department of medical economics, has proven a most popular feature. While the general condition of American business is a moot question, and the general condition of the general practitioner is only too sad certainty, it must be confessed, and this not without pride, that the state of the ILLINOIS MEDICAL JOURNAL far exceeds normal expectations with its steady maintenance of most flattering growth both from a standpoint of advertising patronage and from the perspective of editorial content. Scientific articles of great interest and unusual import have in numerous instances had their original publication, gentlemen, in your magazine. This privilege has been a large factor in stimulating financial stability, since in the progression of the verities commerce must ever be the handmaid of science.

These original articles have dealt with both the scientific and the economic sides of medicine. It is gratifying to note the steadily increasing interest in medical economics. In many medical magazines medical economics is a topic of comparatively recent attention,—and—no matter to what perfection has been developed literature dealing strictly with the scientific phases of medicine. For over fifteen years the ILLINOIS MEDICAL JOURNAL has led the crusade in behalf of medical economics. At the start, about a quarter of a century ago, when the present editor of your Journal became aware of the

necessity for serious consideration of the question of medical economics as an element in the welfare and the protection, of both the practice and of the practitioners of medicine, this was a decidedly thankless movement and one with few sympathizers. Two decades and a half, and especially the last five years have changed all that. On all sides, other periodicals both lay and scientific, are following where we led.

Since a well-informed profession is not necessarily a guarantee of a well-shielded profession, the fight to preserve medical entities dares grant no abeyance. On all sides there is a veritable deluge of pseudo-medical literature from pseudo-medical authorities and from misinformed members of the laity that not only distort medical facts and medical conditions, but what is far more criminal actually and positively pervert in the public eye, the attitude of the ethical profession towards that same public which it has ever been medicine's first and most sacrificial duty to serve.

It is also our opinion that many physicians influenced by high-powered salesmen have invested in expensive apparatus that is worse than useless.

Every news-stand at every corner is crowded with magazines priced from a nickel to a half dollar containing articles and editorials telling the public how the doctors should practice medicine. The content of these articles vary from a direct indictment, false of course, that women died in childbirth from medical carelessness and neglect and that the average doctor cares little more for a parturient patient than for a parturient animal to the deliberate and misleading statements that the high cost of illness is due entirely to the high cost of "medical care."

A most recent example of this mendacity is found in a series of articles in a popular magazine by that old offender, de Kruif, called, "Why Should Mothers Die."

Menacing as is this fusillade for the public ear, even more virulent of result are the intencine attacks upon the profession. Damage done by the misrepresentations of the majority report of the committee on the cost of medical care, crops up continually. Despite the counter argument contained in the minority report, the eschewed majority report is used daily as a basis for attack upon the profession by all the foundations, lobbyists and other parasitical groups and persons who get out of scientific medicine an unmerited and inhumane personal profit.

It is up to the medical press to act as a counter irritant for this insidious infection of ideas. It devolves upon the medical press to impress upon the public, and unfortunately upon some of its own members, that the bulk of the statistical reports as to health and maternity conditions in the United States are as false and delusive as Judas himself. In the first place there is no accurate international yardstick of standards by which to make precise measurements of causes and conditions. Give a lay statistician one figure and he makes an arithmetical progression. Give a scientist a figure and he dissects the figure before he multiplies it.

In spite of all the oral and written abuse heaped upon the medical profession by lay critics and false philan-

thropists the United States manages to maintain a lower death rate than any other civilized nation. It is up to the medical press to make clear this situation to the general public.

Another item that must be taken into consideration by those who dictate the policies of medical literature is that the general public, thanks to this false propaganda, has come to feel that general action must be taken against the medical profession as an enemy against the public purse.

Even now there are brewing such legislative actions to this end that it seems unavoidable to sound again the old familiar war cry, "On to the ballot box." The ballot is not a panacea for all the ills besetting medicine to-day. But it is a lever to control one section of medical attack. Social welfare legislation, corporations practicing medicine, lay foundations interfering with proper medical administration and the attempt to make the practice of medicine a tax supported institution are all evils that organized medicine can cure through the medium of an united alert medical profession, awake to its constitutional right and determined to voice its decisions through the medical press at first hand, second, the lay press, and thirdly by means of a well and directly informed public.

Respectfully submitted,
Charles J. Whalen, M. D., Editor.

The President: We now come to unfinished business.

The Secretary: Last year the House of Delegates authorized the appointment of a committee to consider revision of the constitution and by-laws. It was in 1915 that the by-laws and constitution were last amended as a whole. They were revised in 1931, but other than a few minor changes there has been no revision since. The committee appointed consisted of Drs. Charles B. Reed, *Chairman*, R. K. Packard and myself. Our committee met and recommended minor changes; in many instances changes only in grammatical construction. There will be other changes that will occur, such as those relating to the present way of conducting the business of the House of Delegates. Copies of the constitution and by-laws as we recommended they be revised, have been mimeographed and will be passed around. We have another schedule showing the present reading and the proposed change.

Dr. Blodgett: I move that this mimeographed copy of the constitution and by-laws be considered as having been introduced at this session. (Motion seconded by Dr. C. H. Phifer and carried.)

The President: Under new business the first item is the introduction of resolutions.

Dr. P. R. Blodgett, Chicago Heights: I wish to introduce the following resolution:

1. *Annual Dues for the Coming Year.*

WHEREAS, the present annual membership dues of five dollars provides adequate funds for carrying on the business of the Illinois State Medical Society.

Therefore be it resolved, that the annual dues of the Illinois State Medical Society be five dollars for the coming year.

Dr. Walter Stevenson, Quincy: I wish to introduce the following resolution:

2. *Listing the Name of Charles D. Center as Past President.*

WHEREAS, from time to time there is published by the Illinois State Medical Society a list of past presidents of the Society, and

WHEREAS, Charles D. Center, President-Elect in 1933, met an untimely violent death before being inducted into office as President,

Therefore be it resolved, that in the future Dr. Center's name be listed as Past President Elect,* the footnote to state, "*Died before induction into office."

Dr. W. E. Kittler, Rochelle: I wish to introduce the following resolution:

3. *Sending of President and Secretary of the Society to the Annual Meeting of the American Medical Association.*

Resolved, that the President and Secretary of the Illinois State Medical Society be sent, with the regularly elected delegates to the annual meeting of the American Medical Association with expenses allowed the regular delegates, subject to the approval of the Council.

The President: These resolutions will be referred to the Resolutions Committee. Other resolutions may be sent to the Committee any time before Thursday morning.

We have with us Dr. Frank J. Jirka, Director of the State Department of Public Health, who will report on cooperation with the Social Security Act.

Dr. Frank J. Jirka, Director of State Department of Public Health:

I appreciate this opportunity of coming before you in order to tell you something that the State Department of Health is doing relative to the Social Security Act.

For the past year we have had many conferences with members of that organization known as "social welfare workers." I do not have to tell you gentlemen what they think about us. They have said many things and have written many things about us, and one of them is that we are individualistic; that we are not interested in anybody except ourselves; that there is no such thing as a patient-physician relationship; that we lack intellectual interest in our community or communities and many other things.

I do not know that the medical profession has been entirely negligent or ignorant of local community health. I believe that the record Illinois has maintained among the states of the nation is a remarkable one, when one

considers the fact that the only money the State health department gets is from its own legislature, and which is eight (8) cents per capita; that we have not accepted funds from any foundation whatsoever.

The members of this organization are conveying the impression that Illinois needs a lot of help. Illinois does not need much help from anybody's fund, but it does admit that we must do better work in some places in our state, especially the southern part which needs more community health work, as it is really the worst section of our State, so far as health needs are concerned.

Two weeks ago I was up in the northwest section of our State, in JoDaviess County, and I did not know, or realize that such a lack of health mindedness was present in the northern part of our State, but already a movement is on foot to make that section health-minded.

This organization has been resorting to many interesting methods in order to stimulate health propaganda. They have held bunco parties in this city, and in many other cities of the State, thereby getting much newspaper publicity.

What are the possibilities for Illinois under the Social Security Act? You probably know that the Social Security Act funds are divided into two parts: first from the U. S. Public Health Service under the Treasury Department, and second from the Children's Bureau under the Department of Labor.

We have the opportunity of getting about \$164,000 a year from the U. S. Public Health Service. What are we to do with it?

Tentatively, we have divided the State into twenty-three districts, each district to consist of approximately four counties, and each to have a public health officer, nurse and sanitary engineer, and one or two stenographers. On how large a scale we are going to proceed in this, I can only tell you at this time that it will be very little, due to the fact that the Department has now a fairly well organized division made up of men that are working in the field, and men working in the communities in which they live. We, of the Health department, believe that Illinois has plenty of its own personnel to participate in this work. That work is going to be the same type we are now doing in cooperation with the medical profession, namely, the prevention and control of communicable diseases.

Another portion of this money is to be used for the Industrial Hygiene Division. Up to this time the great State of Illinois has had only one man in the Industrial Hygiene Division. Under the new set-up we expect to spend \$24,000. At the last session of the legislature there was taken away from the State Department of Health the little work we had to do with industrial diseases, namely, the reporting of occupational diseases and then forwarding that information to the State Department of Labor. The set-up now is entirely with the Department of Labor.

The Federal government recently sent to Chicago two representatives—one from the Department of Labor, an attorney who specializes in industrial work, and the other a physician of the U. S. Public Health Service who specializes in occupational diseases. We met with

these representatives of the Federal government, and with members of the State Department of Labor, and we have a mutual understanding whereby the State Department of Health will give to the State Department of Labor a consulting service. By that I mean we will do the scientific research work on industrial diseases with the idea in mind of seeking means for their prevention. As it now stands the State Department of Labor has a scientific laboratory of its own, but due to a large amount of work are unable to carry on with much research.

Therefore, the Federal government representatives believe that the State health department should do some of the work, but of a consulting nature.

Relative to the funds under the so-called Children's Bureau, we are entitled to about \$82,000 or \$84,000 a year. That work is going to consist really of the activities we are now doing, namely, prenatal work, pre-school and school inspections and immunizations, etc. From this appropriation we hope to pay to members of our profession about \$10.00 a day for immunizations against preventable diseases, for which we have preventives, and in their respective districts. We believe this is an opportunity for the medical profession to actually participate in the Social Security activities.

We also have opportunities for spending some money for so-called "refresher courses" for members of the profession, and by members of the Illinois State Medical Society's specialistic groups. The refresher courses are to be given by members of the special group who will appear before the medical societies and will receive so much per diem, plus traveling expenses. In this way we hope to lower the infant mortality and maternal mortality, if that is further possible.

Sir Arthur Newsholme is freely quoted as having said that the social index of a community's welfare is its infant death rate. We have a low infant death rate in Illinois, and in 1935 the lowest infant death rate ever had in Illinois was recorded. Therefore, the Social Security status of Illinois must be a very good one.

We of the health department, and you of the medical profession of the State, know Illinois health needs better than other groups of lay people, and especially that group that heretofore has not been sincerely interested in Illinois' citizens, or as I might say Illinois' humanity.

Nevertheless, I believe that the medical profession should stimulate further public health work throughout the State, and to those of you who have been taking considerable interest in our public health matters I thank you, and congratulate you for it. To those of you from the southern part of the State I further urge that more public health activities be engaged in.

We hear a great deal about the socialization of medicine, in fact, I was going to say the trend toward the socialization of medicine, but the trends are here, and in my opinion, I see no reason why Illinois' medicine should be socialized. This stand is made due to the fact that I know of the cooperation that the profession of our State is giving to its State department of public health, and that means to Illinois humanity. The State Medical Society, through its members, has been giving

many weekly broadcasts and in most parts of the State the profession is further cooperating in many ways, even to the extent of putting in a newspaper a one-page ad that on a certain day they would immunize against diphtheria, and for a very minimum fee.

The State pediatric section of the Illinois State Medical Society has been holding so-called pediatric clinics for members of many of the county medical societies, and this same pediatric section has written a baby book for the State Department of Public Health and which we believe to be an authoritative book on the most modern methods of infant care for Illinois' newborn.

We of the Department believe that we owed an obligation to the citizens of Illinois that they may know this baby book was written by men belonging to the pediatric section of the Illinois State Medical Society.

In closing, I wish to extend my many thanks to the Parent-Teachers Association, the Federated Womens Clubs, the American Legion, and many other such organizations who have a wholehearted interest in Illinois health. I also wish again to thank members of the Illinois State Medical Society for their past cooperation and to bespeak of them their further cooperation and more interest in public health matters. We members of the Department of Public Health are doing everything reasonable to keep the practice of medicine where it belongs—in the hands of the medical profession, which profession has always carried the burdens pertaining to Illinois health on their shoulders and which group knows Illinois' health needs better than any lay group.

The President: I thank Dr. Jirka for his contribution.

The Chairman of the Council, Dr. Neece, desires to make a supplementary report from the Council.

Dr. Neece: The only thing I have to add to the report that has been published is in relation to raising the dues to carry on the expenses of the Society. Two years ago the House of Delegates went on record as lowering the dues two dollars, from seven to five dollars. They felt that by so doing we would increase our membership. There were a great many people lost during the period of depression and we thought we would get more in. This has not proved to be the case. We have had only an increase of 100. With the increased activities that the Society and Council have been carrying on, with the State Legislature in session for seventeen months, and other activities, it seems that we ought to look to the time that we might raise our dues one dollar. At the last meeting of the Council it was recommended that the House of Delegates vote this raise of one dollar.

Dr. E. C. Kelly, Peoria: I move that we adjourn until Thursday morning at nine o'clock. (Motion seconded by Dr. J. M. Hayes, Decatur, and carried).

SECOND SESSION

Thursday Morning, May 21, 1936

The Thursday morning session was called to

order at 9:30 A. M. by the President, Dr. Charles B. Reed, Chicago.

The President: The first order of business will be the report of the Credentials Committee.

Dr. C. B. Ripley, Galesburg: The Credentials Committee has seated 66 down state delegates, 42 Chicago Medical Society, and 16 members of the Council, a total of 124.

Dr. Mather Pfeifferberger: I move that the report be accepted. (Motion seconded by Dr. Robert Hayes and carried.)

The President: The next order of business is the roll call by the Secretary.

(The Secretary called the roll and reported 49 from down state, 29 from the Chicago Medical Society, and 16 members of the Council answering roll call, a quorum being present.)

The President: The House is now constituted for business. We will listen to the reading of the minutes of the Tuesday session.

Dr. J. S. Templeton, Pinckneyville: I move that the reading of the minutes be dispensed with. (Motion seconded by Dr. E. E. Davis, Avon, and carried.)

The President: The next order of business is the election of officers. Nominations are in order for President-Elect.

Dr. J. S. Nagel, Chicago: Chicago presents the name of Dr. Rollo K. Packard as President-elect (Seconded by Dr. Mather Pfeifferberger and carried).

Dr. C. B. Ripley, Galesburg: I move that the nominations be closed. (Motion seconded by Dr. Robert Hayes and carried.)

Dr. G. Henry Mundt, Chicago: I move that the Secretary cast the affirmative ballot for Dr. Packard. (Motion seconded by Dr. C. E. Wilkinson and carried.)

The ballot was cast and the President declared Dr. Packard elected.

The President: Nominations for First Vice-President are in order.

Dr. S. E. Munson, Springfield: I wish to nominate Dr. R. F. Herndon, Springfield. (Seconded by Dr. C. E. Wilkinson.)

Dr. C. B. Ripley, Galesburg: I move that the nominations be closed. (Seconded by Dr. Mather Pfeifferberger and carried.)

Dr. W. E. Kittler, Rochelle: I move that the Secretary cast the affirmative ballot for Dr. Herndon. (Seconded by Dr. Mather Pfeifferberger and carried.)

The Secretary cast the ballot and the President declared Dr. Herndon elected.

The President: Nominations are in order for Second Vice-President.

Dr. C. E. Wilkinson, Danville: I wish to nominate Dr. John W. Long, Robinson. (Seconded by Dr. W. E. Kittler.)

Dr. J. S. Nagel, Chicago: I move that the nominations be closed. (Seconded by Dr. Robert Hayes and carried.)

Dr. J. S. Nagel: I move that the Secretary cast the affirmative ballot for Dr. Long. (Seconded by Dr. W. S. Bougher, Chicago, and carried.)

The Secretary cast the ballot and the President declared Dr. Long elected.

The President: Nominations are in order for Secretary.

Dr. E. P. Coleman, Canton: I wish to place in nomination the name of Dr. Harold M. Camp, Monmouth, to succeed himself. (Seconded by Dr. J. S. Nagel, Chicago.)

Dr. Robert Hayes, Chicago: I move that the nominations be closed. (Seconded by Dr. W. E. Kittler and carried.)

Dr. J. S. Templeton, Pinckneyville: I move that the President cast the affirmative ballot for Dr. Camp. (Motion seconded by Dr. Robert Hayes, and carried.)

The President cast the ballot and declared Dr. Camp elected.

The President: Nominations are in order for Treasurer.

Dr. W. E. Kittler, Rochelle: I take pleasure in nominating Dr. A. J. Markley, Belvidere, to succeed himself. (Seconded by Dr. Mather Pfeifferberger.)

Dr. G. Henry Mundt, Chicago: I move that the nominations be closed. (Motion seconded by Dr. Kittler and carried.)

Dr. C. E. Wilkinson, Danville: I move that the Secretary cast the ballot for Dr. Markley. (Motion seconded by Dr. C. S. Skaggs and carried.)

The Secretary cast the ballot and the President declared Dr. Markley elected.

The President: Nominations are in order for Councilor of the Third District to replace Dr. L. E. Day.

Dr. R. K. Packard, Chicago: I wish to nominate Dr. L. E. Day, Chicago, to succeed himself. (Seconded by Dr. Robert Hayes.)

Dr. P. R. Blodgett, Chicago Heights: I move the nominations be closed. (Motion seconded by Dr. P. J. McDermott, Kewanee, and carried.)

Dr. V. A. McClanahan, Aledo: I move that the Secretary cast the affirmative ballot for Dr. Day. (Motion seconded by Dr. Mather Pfeifferberger and carried.)

The President: Nominations are in order for Councilor of the Sixth District to succeed Dr. T. B. Knox.

Dr. Walter Stevenson, Quincy: I wish to nominate Dr. T. B. Knox to succeed himself. (Seconded by Dr. W. E. Kittler.)

Dr. P. J. McDermott, Kewanee: I move that the nominations be closed. (Seconded by Dr. J. T. Blakely, Fairfield, and carried.)

Dr. C. E. Wilkinson, Danville. I move that the Secretary cast the affirmative ballot for Dr. Knox. (Motion seconded by Dr. E. C. Kelly, Peoria, and carried.)

The Secretary cast the ballot and the President declared Dr. Knox elected.

The President: Nominations are in order for Councilor of the Ninth District to succeed Dr. Andy Hall.

Dr. J. T. Blakely, Fairfield: I wish to nominate Dr. Andy Hall, Mt. Vernon, to succeed himself. (Seconded by Dr. J. S. Templeton.)

Dr. M. A. Rydelski, Chicago: I move that the nominations be closed. (Motion seconded by Dr. P. J. McDermott and carried.)

Dr. P. J. McDermott, Kewanee: I move that the Secretary cast the affirmative ballot for Dr. Hall. (Motion seconded by Dr. Harry Phillips, Union County, and carried.)

The Secretary cast the ballot and the President declared Dr. Hall elected.

The President: Nominations are in order for Councilor of the Tenth District, to succeed Dr. J. S. Templeton.

Dr. Elizabeth R. Miner, Macomb: I wish to nominate Dr. J. S. Templeton to succeed himself. (Seconded by Dr. P. J. McDermott.)

Dr. C. E. Wilkinson, Danville: I move that the nominations be closed. (Motion seconded by Dr. Mather Pfeifferberger and carried.)

Dr. P. J. McDermott, Kewanee: I move that the Secretary cast the affirmative ballot for Dr. Templeton. (Motion seconded by Dr. J. R. Balinger, Chicago, and carried.)

The Secretary cast the ballot and the President declared Dr. Templeton elected.

The President: Nominations are in order for delegates to the American Medical Association, four retiring and one to be elected to succeed Dr. W. D. Chapman, deceased.

(Nominations were presented in each case and the following delegates elected.)

Charles J. Whalen, Chicago; John J. Pflock, Chicago; G. Henry Mundt, Chicago; G. C. Otrich, Belleville, and E. S. Hamilton, Kankakee.

The President: Nominations are in order for five alternate delegates at large.

(Nominations were presented in each case and the following alternate delegates at large elected.)

N. S. Davis III, Chicago; M. I. Kaplan, Chicago; F. P. Hammond, Chicago; L. O. Frech, Decatur, and R. J. Coultas, Mattoon.

The President: Nominations are in order for members of Standing Committees.

(Nominations were presented in each case, the Secretary instructed to cast the affirmative ballot and the President declared them elected.)

The following Committees were elected:

Public Relations: W. S. Bougher, Chicago; H. W. Woodruff, Joliet, and F. H. Mueller, Chicago.

Medical Legislation: John R. Neal, Chairman, Springfield; Mather Pfeifferberger, Alton, and M. J. Hubeny, Chicago.

Medico-Legal: (Two elected) Walter Wilhelmj, East St. Louis, and Oscar Hawkinson, Chicago.

Medical Education and Hospitals: J. P. Simonds, Chicago; W. R. Marshall, Clinton, and H. O. Munson, Rushville.

Relations to Public Health Administration: F. F. Maple, Chicago; Thomas Meany, Chicago; L. O. Frech, Decatur; Frank Heda, Chicago, and Bernard Klein, Joliet.

The President: The next order of business is the selection of a meeting place for 1937.

Dr. E. C. Kelly, Peoria: I am happy to have the privilege of inviting the Illinois State Medical Society in the name of the Peoria Medical Society to meet in Peoria in 1937.

Dr. H. A. Beam, Moline: I represent Rock Island County, which includes Rock Island, Moline, East Moline and Silvis, with an urban population of approximately 90,000. Your Society met with us nine years ago. I ask the privilege of the floor for Dr. Freeman for three minutes.

Dr. D. B. Freeman, Moline: On behalf of the Rock Island County Medical Society I wish to extend an invitation to the Society to meet in Moline in 1937. This invitation is seconded by the Moline City Physicians Club, and the Moline Chamber of Commerce stands back of it. We are assured of the hearty co-operation of our Mayor, who is a physician, Dr. A. H. Arp.

(Ballots were cast, Peoria receiving 49, Moline 45 and Jacksonville 1.)

The President: Peoria is selected as the meeting place for 1937, subject to the approval of the Council after investigation.

The President: The next order of business will be the report of the Reference Committees.

COMMITTEE ON REPORTS OF OFFICERS

Dr. G. Henry Mundt, Chicago: *Report of President.* Your Committee notes with interest the optimistic attitude of the President regarding the Social Security Act, and commends his interest in this measure.

Your Committee notes in the President's report that notwithstanding the decrease in dues, there has been no material increase in membership and the statement that there are still between 2,000 and 3,000 physicians eligible for membership. We note with interest, the unstinted praise of the President of the work of the various groups and committees whose function it was to promote the welfare of the Society.

Your Committee concurs in the recommendation made in the next to the last paragraph of the President's report, that a committee be appointed to see that the provisions of the law (corporations practicing medicine) are enforced.

I move the adoption of this portion of the report. (Motion seconded by Dr. Andy Hall and carried.)

Report of the Secretary. Your Committee commends the attitude of the Secretary as expressed in the fourth paragraph of his report commending the present method of providing medical care for the American people and questioning the feasibility of methods proposed by many persons and groups. In the fifth paragraph, the Secretary states that the menace of "State medicine" seemed more threatening one year ago than today. While he is justified in this opinion, your Committee wishes to call attention to the probability that we have been existing during the lull which frequently precedes a storm.

We were particularly pleased to note the high praise of the Legislative Committee, the Medico-Legal Committee and the Educational Committee contained in the report of the Secretary. We note the slight increase in membership during the last year, but also, the fact that there has been a slight decrease in the last two years. This condition, we know, is not the fault of the Secretary or any of the constituted groups of the Illinois State Medical Society.

We commend the high purpose of the Secretary in advocating no curtailment in the activities of the Society, rather increasing them in number.

In the third paragraph, under *The Component Socie-*

ties, of the Secretary's report, we note that one small county medical society has given up its charter and the few physicians in that county have affiliated themselves with the societies in the adjoining counties. Your Committee recommends that the Council make a study of the feasibility of amalgamation of some county societies in order to increase the interest in organized medicine and to promote the dissemination of knowledge of scientific medicine.

Your Committee highly commends the improvement in the character of records kept in the Secretary's office.

In the last paragraph under *The Annual Meeting*, we note that there were a number of commercial exhibits which were not accepted because of their questionable character; this we commend.

Your Committee notes with regret the report of the Society's loss by death of three of its past Presidents: Dr. E. P. Sloan, Dr. William D. Chapman, and Dr. M. L. Harris.

Because there is a separate Committee to report, the Committee has no comment to make upon that section of the report having to do with proposed changes in constitution and by-laws.

Your Committee refrains from comment upon that portion of the Secretary's report having to do with the finance of the Society, because of its inability to break down the report and also because your Committee has every confidence in the Finance Committee of the Council.

I move the adoption of this portion of the report. (Motion seconded by Dr. Andy Hall and carried.)

Report of the Treasurer. Your Committee refrains from any comment upon the report of the Treasurer, because of its inability to break down the various items in the report, but more especially because it has every confidence in the Finance Committee of the Council.

I move the adoption of this portion of the report. (Motion seconded by Dr. J. S. Templeton and carried.)

Report of the Chairman of the Council. Your Committee notes with gratification, the high praise of the Chairman of the Council for the activity of the Medical Advisory Committee to the Illinois Emergency Relief Commission, of the Committee on Medical Economics, of the Educational Committee, of the Legislative Committee, of the Medico-Legal Committee and of the Corporation Practice Committee.

Your Committee is gratified with that portion of the report in which the Chairman of the Council commends the activities of Dr. F. J. Jirka, Director of the State Department of Public Health, knowing full well the effort of that official to cooperate in every way with the physicians of the state.

Your Committee notes the Chairman's insistence that the work of the Illinois State Medical Society be in no way hampered and are in thorough agreement with this portion of the report.

I move the adoption of this portion of the report. (Motion seconded by Dr. W. E. Kittler and carried.)

COMMITTEE ON REPORTS OF COUNCILORS

Dr. Mather Pfeifferberger, Alton: The Committee concurs in the reports and wishes to commend the ef-

forts put forth by the Councilors during the last year. In regard to the increase in dues, we believe that the dues should be left as they are, but that the same effort to increase the membership should be made throughout the county societies that has been made by the Chicago Medical Society. We were impressed by the report of Dr. Weld of the First District in his calling to our attention the position taken by industry in regard to the Federal Government in competing with the doctor and in which industry was finally with organized medicine in combating this evil.

Your Committee was particularly impressed with the detailed report of Dr. Munson of the Fifth District, in which he enumerated the membership in each county of the Fifth District, and would like to recommend that each Councilor report next year contain the number of doctors in each county of the respective districts, the number of members in good standing enumerated, and the names of the available or prospective members obtained and a concerted effort made to enlist those available as members of the Illinois State Medical Society, thus increasing the membership. This would increase the revenue and prevent the increase of dues as the same overhead expense could handle said increase.

We believe a campaign of education upon the advantages of organized medicine to the medical student before graduation would be mutually advantageous to the new doctor and the Society.

I move that the report be adopted. (Motion seconded by Dr. J. S. Nagel and carried.)

COMMITTEE ON REPORTS OF STANDING COMMITTEES

No member of the Committee present to make a report.

COMMITTEE ON REPORTS OF COUNCIL COMMITTEES

Dr. P. R. Blodgett, Chicago Heights: Referred to this Committee were the annual reports of the following Committees:

Educational Committee. We can only commend the work of the Educational Committee and urge each county society to avail themselves of the services this Committee offers. It is noted that the Committee has lost one of their most active workers in the death of Dr. Chapman. It is to be hoped that the new member to be appointed to this post will be equally enthusiastic.

It is felt that the article, "Social Security Act and the Doctors," by Dr. Reed, should be still more widely disseminated, not only to the public but to our own members as well. It is recommended that each member of the Illinois State Medical Society read and discuss this article.

Scientific Service Committee. The work of this Committee in giving over 138 talks to fifty county societies and hospital groups is to be commended. We urge that emphasis be laid on the teaching clinic phase of this Committee's activities.

Medical Economics Committee. It is urged that each county society have at least one meeting per year on the subject of medical economics. We concur heartily

with the position of this Committee that the medical profession remain alert and militant in regard to this matter.

Veterans' Service Committee. This Committee has accomplished considerable in ironing out difficulties and disagreements of the medical profession in regard to care of veterans. There remains considerable to be done in holding down the care granted to veterans with non-service connected disabilities.

Medical Education and Hospital Committee. This report is quite complete and we note with satisfaction that the Committee is on the alert in regard to the group hospital schemes. These hospital insurance schemes have many possibilities for the further encroachment on the private practice of medicine and we urge continued watching of this matter by this Committee.

Medical Advisory Committee to the Illinois Emergency Relief Commission. This Committee has succeeded to a large degree in seeing that the "physician-patient" relationship of ordinary practice has been undisturbed. It is recognized that the pay of physicians doing this work has been grossly inadequate as measured by the standards of private practice. It must be emphasized, however, that the doctors have received money for work that would have otherwise to be performed gratis. With the advent of the W. P. A. and low wage pay scale it is found that most of these families have no money left after paying rent, groceries, etc., to pay for medical services. The Committee, therefore, have a real problem which it is to be hoped they recognize in securing supplemental aid for medical service.

Conclusion. This Committee has been extremely fortunate in reviewing reports of active committees. This reviewing committee is of the opinion, however, that a great deal of the value of the work of these committees is lost when reports are made only at annual gatherings. We are of the opinion and urge that the activities of these Committees and their recommendations be printed from time to time in the ILLINOIS MEDICAL JOURNAL. This to be independent of the annual report of the Committees.

I move that the report of this Reference Committee be adopted and its recommendations concurred in. (Motion seconded by Dr. Andy Hall and carried.)

COMMITTEE ON SCIENTIFIC WORK, SOCIAL SECURITY PROBLEMS, THE EDITOR AND HISTORIAN

Dr. F. O. Fredrickson, Chicago: In the absence of Dr. Otrich, the Chairman, I beg to submit the following report:

I believe there has been some mistake; we have gone into the report of the *Scientific Service Committee*.

The report of the Scientific Service Committee meets the approval of the Reference Committee, and we commend very highly the clinics given before the various county medical societies.

After an analysis of the cost of furnishing the individual essayist on scientific papers and the clinicians for the various clinics sponsored by the county medical so-

cieties, it is the opinion of the Reference Committee that the report of the Scientific Service Committee be approved as published in the 1936 official annual reports.

I move the adoption of this portion of the report. (Motion seconded by Dr. W. E. Kittler and carried.)

Committee on Social Security. After studying the report of the Committee on Social Security we have the following to offer:

After hearing Dr. Jirka's report on the Social Security activities, as they are related to the Department of Public Health of our State, and from his report, the Department will have a cooperative attitude towards the Illinois State Medical Society. Therefore, we suggest that the Committee on Social Security have closer cooperation with the Department of Public Health.

It has come to our knowledge that there is a hospital operating on an insurance basis, sponsored by the Miners' Union at West Frankfort, Illinois, where much might be learned if proper investigation were made by the Committee.

The Reference Committee approves the report of the Committee on Social Security Problems as reported in the 1936 official annual reports.

I move the adoption of this portion of the report. (Motion seconded by Dr. H. A. Beam and carried.)

Report of the Editor. The report of the Editor speaks for itself. The Committee approves the report as printed in the 1936 official annual reports.

I move the adoption of this portion of the report. (Motion seconded by Dr. H. A. Beam and carried.)

Report of the Historian. On investigation the Committee finds no report from the Historian. On questioning the Secretary we have ascertained that he has not submitted a report for the last two years. Therefore, due to the fact that a number of the members have paid, in advance, their subscriptions for the History of Medicine in Illinois, the Reference Committee suggests that steps be taken by the Council of the Illinois State Medical Society for completion and deliverance of this work.

I move the adoption of this portion of the report. (Motion seconded by Dr. J. R. Ballinger and carried.)

Dr. J. S. Nagel, Chicago: I move the adoption of the report as a whole. (Motion seconded by Dr. H. A. Beam and carried.)

REPORT OF THE RESOLUTIONS COMMITTEE

Dr. Oscar Hawkinson, Chicago: The Committee wishes to submit the following report:

1. SECRETARIES' CONFERENCE

WHEREAS, for many years it has been customary in the Illinois State Medical Society to have an annual conference of the component county society secretaries each year in connection with the Annual Session, and

WHEREAS, the subjects placed on the program in recent years at the Secretaries' Conference have been relative to the problems which the medical profession as a whole have been vitally interested in, and

WHEREAS, efforts have been made to increase the interest and the attendance at the annual Conference so that the deliberations will not be limited to the secretaries alone, and

WHEREAS, there is invariably an unusual amount of confusion on Tuesday morning, the time provided for the Conference, which limits the attendance and detracts from the value of the meeting, therefore

Be it resolved, that the House of Delegates of the Illinois State Medical Society in regular session recommend that in the future one day be set aside each year for a Conference of County Medical Society Secretaries, and other officers, and a program of general interest to all be authorized, and be it

Further resolved, that the Secretaries' Conference be held either on Monday, the day before the opening of the Annual Meeting, or be arranged as a special meeting at another time of the year so that a great number of members of this Society may be benefited through the arrangement.

Dr. Oscar Hawkinson: I move the adoption of this resolution. (Motion seconded.)

Dr. Andy Hall, Mt. Vernon: I think you have better attendance of secretaries on your regular forenoon than you will if you try to call them together on Monday. This meeting is not alone for secretaries. The program is arranged so that it will be of interest to every member of the Society. It should be impressed on other members of the Society that they are welcome to our conference. Some one reported the other morning at our meeting, that this conference was only for secretaries. I think it is better to have it as we do now.

Dr. J. S. Templeton, Pinckneyville: Several years ago I was secretary of the Secretaries' Conference, and connected with it for many years. My experience is that if you try to have it on Monday you will make a failure. Many men cannot get here for the full week. I am not saying that we should have it on Tuesday morning, but I think some time should be found when it is possible to have a good attendance.

Dr. Mather Pfeifferberger, Alton: I offer a substitute motion that this resolution be referred to the Council. (Motion seconded by Dr. V. A. McClanahan, Aledo.)

Dr. C. S. Skaggs, East St. Louis: Having had some experience with the Secretaries' Conference, I take the opposite view. I think if you will count the attendance, we cannot say that the Secretaries' Conference is measuring up to the full value it should be to the Society. I feel that the Secretaries' Conference could be one of outstanding economic importance to the Society. For several years I have attended and I have never seen but one Secretaries' Conference that was crowded. Tuesday morning does not seem to be the time that it attracts an au-

dience. I feel that if you put it on Monday, we would have a better attendance.

Dr. T. D. Doan, Palmyra: I think the ones to decide when it should be held will be the secretaries of the county medical societies. We have had, as indicated by Dr. Skaggs, only a few well attended meetings. Our meeting the other day, I believe I am safe in saying, was attended by more who were not secretaries than were secretaries. I believe if it were left up to the secretaries themselves as to the day, a decision could be arrived at. I am not saying when the day should be. Our Secretary of the State Medical Society is so easily imposed upon that I believe he would be glad to write to each secretary in the state asking him when it will be held.

The Secretary: I might say that in quite a number of adjoining states and quite a number of other states throughout the country, they are having a special day set aside for the Secretaries' Conference. In Indiana they have an all-day meeting in Indianapolis, and the State Society pays the traveling expenses of every secretary who attends. The same thing is done in Wisconsin and Minnesota. Minnesota has a meeting each year in February; the Wisconsin society in the fall. Both the Indiana and Wisconsin societies have held one meeting at the American Medical Association headquarters in Chicago. I understand that a good part of the day was spent in going over the plant. I am not sure that is the most desirable. I think we should consider the feasibility of having a separate meeting at some other time. I believe that suggestion which has been adopted in societies smaller than ours of paying the traveling expenses of the secretaries is well worth while.

(The motion to refer the resolution to the Council with power to act was carried.)

2. SENDING OF PRESIDENT AND SECRETARY OF THE SOCIETY TO THE ANNUAL MEETING OF THE AMERICAN MEDICAL ASSOCIATION

(See page 40)

Dr. Hawkinson: Knowing that the Secretary has been allowed his expenses to meetings of the American Medical Association, and knowing that he does us a very fine service, we recommend that that be continued, but that part of the resolution referring to the President going to the American Medical Association at our expense we do not approve. I would like to move the acceptance of our recommendation. (Motion seconded and carried.)

3. ANNUAL DUES FOR THE COMING YEAR

Dr. Hawkinson: I have two resolutions diametrically opposite in their purport. We are making no recommendations. I would like to read both and let the House decide.

(A) WHEREAS, the auditor of the accounts of this Society reports that we have this year drawn on our reserves to the extent of \$6,863.52, or approximately \$1.00 per member, due to increased expense of necessary activities, namely:

1. Unusual legislative expense because the legislature has been in session almost continuously for seventeen months (and other special sessions have been called);

2. Increase in the necessary operating expense of the Medico-legal Committee due to the increase in malpractice suits during the past two years;

3. Unusual expense due to social security legislation, etc.;

Therefore be it resolved, by the Council of the Illinois State Medical Society, that dues be increased \$1.00 per member per year, or that the annual dues be six dollars (\$6.00) a year.

(B) WHEREAS, the present annual membership dues of five dollars provides adequate funds for carrying on the business of the Illinois State Medical Society,

Therefore be it resolved, that the annual dues of the Illinois State Medical Society be five dollars for the coming year.

Dr. P. J. McDermott, Kewanee: I move that the resolution calling for five dollars' dues (B) be adopted. (Motion seconded by Dr. P. R. Blodgett.)

The President: The question of dues is brought up each year.

Dr. F. P. Hammond, Chicago: I move that the motion to adopt the resolution be laid on the table. (Seconded.)

Dr. E. S. Hamilton, Kankakee: A motion to table is not debatable.

Dr. Hammond: My motion was that the motion to adopt the resolution be laid on the table. A motion was made to adopt the resolution.

The President: I call for the question on the motion to adopt the resolution.

Dr. T. H. Culhane, Rockford: I wish to take issue with the Chair on his ruling. While I am not in favor of the motion to lay on the table, according to Roberts' Rules of Order, it is not debatable.

The President: I call Dr. Culhane's attention to the portion of Roberts' Rules of Order stating that a motion to lay on the table is debatable, it can be amended, a substitute motion can be applied, and it can be reconsidered. Does the House wish to make a motion that is debatable?

Dr. Walter Stevenson, Quincy. I move that

the Chair be sustained. (Motion seconded by Dr. Andy Hall.)

The President: Roberts' Rules of Order contradicts itself. In one place it says a motion to table is debatable, and in another place it says it is not.

Dr. E. H. Weld, Rockford: I move a substitute motion that all in favor of having the dues six dollars stand, and give them a chance to express themselves, and then have all those who want the dues at five dollars stand.

Dr. P. R. Blodgett: A point of order. A vote has been taken and the count not announced.

The President: There has been no count of the vote.

Dr. G. Henry Mundt, Chicago: To clarify, I move that the entire matter be laid on the table. (Motion seconded by Dr. I. H. Harter, Stronghurst, and carried.)

Dr. Mundt: This is a very important matter, and I would suggest that we hear from the Chairman of the Council. Undoubtedly the Council has considered this thing, and it is perfectly wise and feasible that the Council present its opinion to this House of Delegates on this matter.

Dr. T. D. Doan: I rise for a matter of information. Did we not adopt our former resolution?

The President: The entire matter of resolutions on dues was laid on the table. Now we will consider the question of annual dues.

Dr. P. R. Blodgett: I move that the annual dues be five dollars. (Motion seconded.)

Dr. I. H. Neece: During the last year we have gone into our reserve to the amount of \$7,000, which means \$1.00 per member. What happened to this money? Two years ago we lowered the dues to five dollars. Most of the county societies have not lowered their dues. They remit five dollars to the State Society. We need this extra money, otherwise we will be in the hole. I believe it is time that we raise the dues to six dollars, so the work can be carried on. The argument for reducing the dues was to increase the membership. That has not been the case.

Dr. P. R. Blodgett, Chicago Heights: The same reasons which prompted the House of Delegates two years ago to reduce the dues are still with us. In the Chicago Medical Society there has been an appreciable increase in membership in the last two years. If the county societies have not reduced their dues and have a little

more money to carry on the work of the county society that is their business. I do not doubt but what the county societies in general need a little more money. If my memory serves me, there was a reserve two years ago of approximately \$110,000. I have here the treasurer's report of this year which shows approximately the same reserve, between \$109,000 and \$110,000. When and as the occasion arises that we need to increase the dues, I am for an increase in dues, not a dollar but five dollars if necessary to carry on the work of this Society. I appreciate just as much as anyone can the fact that by the late economic situation the individual doctor has not been paid so much in the last two years. With a reserve of \$109,000 there is no reason that can be given to me why the dues should be raised at this time. The reserves of the State Society should take care of emergencies. This is apparently a long emergency period. The State Society has carried on no more activities the last two years than heretofore, so the Treasurer's balance is approximately the same. I see no reason for increasing the dues. I think psychologically this is the wrong time. I think the question of membership strength must be carried on more actively throughout the state. It is not a question of dropping any activity at all when we have a reserve of \$109,000.

Dr. F. P. Hammond, Chicago: I rise to a point of order. There is a play, it seems to me, against parliamentary procedure. This matter of the resolution for five dollar dues was laid on the table. The first resolution (A) is the next order of business. I appeal to the ruling of the Chair, that the resolution making the dues six dollars a year be adopted. I so move.

Dr. J. S. Nagel, Chicago: I think the gentleman is incorrect. If the House decides to leave the dues at five dollars, it must be the consensus of the House whether we should dip into the reserve or curtail our work.

Dr. G. R. Ingram, Champaign: I rise to a point of order. In your order of business, there is an order for fixing the dues. We are under report of committees now.

The President: All in favor of the motion that the dues be five dollars, please stand. (48 in favor.) Opposed? (27). The motion is carried that the dues for the coming year be five dollars.

4. LISTING THE NAME OF CHARLES D. CENTER AS PAST PRESIDENT

(See page 40)

Dr. Hawkinson: The Committee recommends the adoption of this resolution, and I so move. (Motion seconded and carried.)

5. INSTRUCTION OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Resolved, that the action of the Council of the Illinois State Medical Society in instructing the delegates to the American Medical Association to support the candidacy of a former President of the Illinois State Medical Society is hereby commended, endorsed and approved.

Dr. Hawkinson: We bring you this resolution without any recommendation.

Dr. J. S. Nagel: I move that this resolution be tabled. (Motion seconded and carried.)

6. ACTION OF SPECIAL SOCIETIES TOWARD THE STATE SOCIETY

WHEREAS, the only authority that can properly speak for the Illinois State Medical Society is vested in the duly elected officers of the Society, and

WHEREAS, special societies and component groups have at various times taken such action as to discredit, to nullify or to belittle the position of the State Society, therefore

Be it resolved, that any such unauthorized action is condemned as bad practice, and contrary to the best interests of the Illinois State Medical Society.

Dr. Hawkinson: We offer this resolution without any recommendation.

Dr. J. S. Nagel: I move that it be tabled. (Motion seconded by Dr. M. A. Rydelski, Chicago, and carried.)

7. DEATH OF DR. SILBER C. PEACOCK

WHEREAS, it is currently reported by the Press that Dr. Silber C. Peacock, of Chicago, Illinois, was lured from his home on the night of January second, nineteen hundred and thirty-six, and shot to death by four youthful bandits who have been captured and are now being held in custody, and

WHEREAS, Dr. Peacock in answering a false telephone call, started on an "errand of mercy" presumably to attend a sick child, in the line of his professional duty. On arriving at the address given him, he was met by the bandits and as he stepped from his car was robbed and slain; and

WHEREAS, three of the robbers admitted that one of their specialties in criminal ventures was the waylaying of physicians. They also admitted having robbed three physicians, in addition to Dr. Peacock, therefore be it

Resolved, that the members of the House of Delegates of the Illinois State Medical Society deprecate such gross violation of the law; such an alarming offense against morality; and the terrible and shocking tragical experience of Dr. Peacock; furthermore be it

Resolved, that as a protection to all physicians and surgeons who are subject to call at all hours of the day and night (especially of nights) to attend suffering humanity, and in many instances to save the lives of

unfortunate sufferers, this House of Delegates recommends and urges a speedy trial in the Courts of Justice, for these criminals and a prompt expiation of their crime, both as a means of justice, and as a deterrent of this kind of foul crime in the future; again be it

Resolved, that this House of Delegates hereby expresses its sympathy to Dr. Peacock's relatives, for his untimely death in the practice of his chosen profession, and that a copy of these resolutions be spread on the minutes of this House of Delegates.

Dr. Hawkinson: This resolution comes from the McLean County Medical Society. Your Committee moves the adoption of this resolution. (Motion seconded)

Dr. Walter Stevenson: These bandits have all been convicted.

Dr. D. B. Pond, Chicago: At the time the resolution was written, they were not. It should be accepted in its entirety.

(Motion to adopt resolution carried)

8. CORPORATION PRACTICE OF MEDICINE

WHEREAS, there has been a ruling by the Illinois Supreme Court, that according to the Medical Practice Act, of the State of Illinois, corporations may not practice medicine in the State of Illinois, and

WHEREAS, this ruling of the Illinois Supreme Court is in accord with and sustains the opinion handed down by the Honorable Otto Kerner, Attorney General, and

WHEREAS, this mandate of the Illinois Supreme Court has not been enforced by the law enforcing agents in the County of Cook and State of Illinois, therefore be it

Resolved, that the Illinois State Medical Society, through its duly elected officers, take the necessary action in demanding that the State's Attorney of Cook County and the Attorney General of the State of Illinois enforce the ruling, that corporations may not practice medicine and that they proceed at once to close those institutions which are remaining open in defiance of, and in violation of the law.

Dr. Hawkinson: Your Committee recommends that this resolution be referred to the Council. I so move. (Motion seconded)

Dr. G. Henry Mundt: The same thought was contained in the report of the President, and the Reference Committee on Reports of Officers, commended and recommended that the action be concurred in by the House, consequently I think it is perfectly right to refer this to the Council.

(Motion to adopt resolution carried)

9. INSTRUMENTS FOR TESTING VISION OF SCHOOL CHILDREN

We, the members of the Eye, Ear, Nose and Throat Section of the Illinois State Medical Society, having knowledge of the effort of some commercial interests to introduce the use of complicated devices for the determination of the vision of school children in the State of Illinois, strongly recommend the use of the Snellen Test Type, for the determination of the acuity of vision. We advocate this, first, because the Snellen Test Type is superior to any other method; second, it is very inexpensive; third, because of its simplicity, it excels any other method.

We move the adoption of this resolution with the recommendation that it be sent to the Department of Health of the State of Illinois, with the request that it be transmitted to the local departments of health of the villages, towns and cities of Illinois, to the superintendents of schools of counties and the larger cities, to the heads of teachers' colleges, state normal schools and parochial schools.

Dr. Hawkinson: The Committee recommends the adoption of this resolution. I so move. (Motion seconded)

Dr. G. Henry Mundt, Chicago: This is a thing in which the ophthalmologists are tremendously interested. I take this opportunity to consume this time of the House to say what we are trying to do in the Chicago Ophthalmological Society. There is a very definite effort on the part of commercial houses and on the part of optometrists to make more complicated the determination of the vision of school children than it really is, with the hope of making it the practice in the schools that the school nurse under the guidance of the school physician take the vision. The Chicago Ophthalmological Society feels very definitely that the determination of vision should be done by the physician or by some person under the direction of the physician, not only because we feel that it will be done better but because we feel very definitely that it should be incorporated in the physical record of the child. I should like permission of the House to revamp this resolution, if you will adopt it in principle, after the meeting of the Chicago Ophthalmological Society next Monday night. It was given to me and I had no opportunity to get definite details of the devices which are now being put out. Miss Audrey Hayden, Secretary of the Society for the Prevention of Blindness, is interested in the resolution.

Dr. A. B. Magnus, Chicago: I take exception to this resolution, because it savors of Washingtonian influence with business. For that matter you might as well tell every examining physician in the schools how to proceed to examine a child. Perhaps two months from now we may have another method. It smells of dictatorial influence with business. The physician has a right to pursue any method he wishes in the examination of a patient. There should be no exception made as to how the ophthalmologist or any other specialist proceeds to make an examination.

Dr. Mundt: I feel I must answer that. Dr. Magnus does not quite understand the problem. I think you will find that there is no physician advocating the method of determining vision which is trying to be foisted in certain places. There is a machine which costs approximately \$70.00, which has been bought by a few school superintendents under the very strong recommendation of the people who have gotten out the machine on the recommendation of the optometrists. No gentleman living has any more feeling than I have on the necessity of freedom of the medical man, but I do feel that the taking of vision should be done by physicians. I believe if this House of Delegates voted to advocate the type of instrument named in this resolution that it will make a definite error. We must stand definitely against the

irregular practitioner and the optometrist is one of them.

(Motion to adopt the resolution carried.)

Dr. Hawkinson: I move the adoption of the report of the Resolutions Committee as a whole. (Motion seconded and carried.)

I would like to move that the Secretary be instructed to send a vote of thanks to the Springfield hotels, to the doctors who entertained us and their ladies, and to the usual list of people which the Secretary has. (Motion seconded and carried.)

The President: The next order of business is the report of the Committee on Miscellaneous Business.

COMMITTEE ON REVISION OF CONSTITUTION AND BY-LAWS

Dr. Walter Stevenson, Quincy: We cannot submit a written report of the work assigned to us. We wish to approve the suggested changes in the constitution and by-laws, with the exceptions which I will read.

The proposed changes in the constitution are as follows:

ARTICLE IV. COMPOSITION OF THE SOCIETY

Sec. 2. Members who have been in good standing for thirty-five years and have reached the age of seventy years may on recommendation of their component society be made a "Member Emeritus" and have all the rights and privileges of members without payment of dues to the Component Society or the State Society.

Proposed Change: Sec. 2. A member who has been in good standing for thirty-five years and has reached the age of seventy years may, on recommendation of his component society, be made a "Member Emeritus" and have all the rights and privileges of members except malpractice protection, without payment of dues to the component, or state society.

Dr. Stevenson: The Committee recommended that this Section remain as it is, with the addition that the Emeritus Members be denied malpractice protection. The Reference Committee feels if we are going to do anything for these members, we should also protect them from a medico-legal standpoint. I move that the original article remain. (Motion seconded by Dr. W. S. Bougher and carried.)

ARTICLE V. HOUSE OF DELEGATES

The House of Delegates shall consist of (a) Delegates elected by the Component Societies; (b) the Councilors; and (c) ex-officio, the president and secretary of this Society. It shall be the legislative body of this Society, and shall conduct all business, except such as is otherwise provided for by the Constitution and By-Laws. All recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council. Fifty delegates representing not less than twenty counties shall constitute a quorum for the transaction of business.

Proposed Change: The House of Delegates shall consist of (a) Delegates elected by the Component Societies; (b) the Councilors; and (c) ex-officio, the president, president-elect and secretary of this Society. It shall be the legislative body of this Society, and shall conduct all business, except such as is otherwise provided for by the Constitution and By-Laws. All recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council. Fifty delegates representing not less than twenty counties shall constitute a quorum for the transaction of business.

Dr. Stevenson: Some one recommended that the delegates and alternate delegates to the American Medical Association be made ex-officio members of the House of Delegates, but our committee did not recommend it. The Committee recommends that the proposed change be passed as recommended by the original committee.

Dr. G. Henry Mundt, Chicago: I move to sustain the old constitution. (Motion seconded and carried)

ARTICLE IX. OFFICERS

Sec. 2. The President-Elect, Vice-Presidents, Secretary and Treasurer shall be elected annually by the House of Delegates, to serve for a term of one year. The Councilors shall be elected by the House of Delegates. Three of them shall be elected at first to serve for one year, three to serve for two years, and three to serve for three years. Thereafter four shall be elected annually to serve for three years. All officers shall serve until their successors are elected and installed.

Proposed Change: Sec. 2. The President-Elect, Vice-Presidents, Secretary and Treasurer shall be elected annually by the House of Delegates, to serve for a term of one year. The Councilors shall be elected by the House of Delegates. Three of them shall be elected at first to serve for one year, three to serve for two years, and three to serve for three years. Thereafter four or five as the case may be shall be elected annually to serve for three years. All officers shall serve until their successors are elected and installed.

Dr. Stevenson: According to the reading of this Section provision is made for only nine Councilors and there are eleven. I talked with one member of the Committee and he seems to think that the following sentence, "Thereafter four or five as the case may be shall be elected annually . . ." removes the ambiguity. I move that the constitution stand as is. (Motion seconded)

Dr. W. E. Kittler, Rochelle: At the time this constitution was written there were only nine councilor districts.

The Secretary: That has been provided for by this House of Delegates placing counties in certain districts. There was a change in the Fifth District by adding Montgomery County. The action of the House of Delegates is not necessarily included in the constitution and by-laws.

Dr. Kittler: I still think it would be good to have it changed.

Dr. C. S. Skaggs, East St. Louis: We are revising

the constitution and by-laws to stand for some little time to come. While it is true that the House of Delegates does not provide for councilor districts, it does provide for the officers of the Society and the number of councilors they have. The constitution only provides for nine. I agree with Dr. Camp that we do not provide in our by-laws for the districting of the councilor districts, but these councilors are officers of this body. I think it should be plain to all members. It is plain to those who have gone over it. Is it plain to the man in the state who reads the constitution?

The Secretary: In answer to Dr. Skaggs's question, it is very plainly stated in Article VI, section 1. By the action of the House of Delegates three years ago, the retiring president becomes a councilor-at-large for three years. The revised constitution has that included.

Dr. Walter Stevenson: I move that the old article remain as formerly. We feel it is covered entirely by the words, "Hereafter four shall be elected annually . . .". (Motion seconded by Dr. I. H. Harter, Stronghurst, and carried)

Now we come to the changes in the By-Laws.

CHAPTER II. ANNUAL SESSION OF THE SOCIETY

Sec. 1. The Annual Session shall convene on the third Tuesday of May, but the President, the Council concurring, may change this time in order that the Society may convene at least ten days before the date set for the meeting of the American Medical Association, or for any other good and sufficient reason. The place of holding the Annual Session shall be determined by the House of Delegates.

Proposed Change: Sec. 1. The Annual Session shall convene on the third Tuesday of May, but the President, the Council concurring, may change this date in order that the Society may convene at least ten days before the day set for the meeting of the American Medical Association, or for any other good and sufficient reason. The place of holding the Annual Session shall be determined by the House of Delegates.

Dr. Stevenson: Your Committee recommends that the proposed change in Section 1 be further changed to read as follows:

"The Annual Session shall convene on the third Tuesday of May, but the President, the Council concurring, may change this date for good and sufficient reason. The place of holding the Annual Session shall be determined by the House of Delegates from a list of cities extending invitations, provided such cities have been approved by the Council as having adequate convention facilities."

I move the adoption of the Committee's recommendation. (Motion seconded and carried)

CHAPTER IV. SECTIONS

Section 1. For the transaction of scientific business, there shall be one or more Sections, as may be determined from year to year by the committee on scientific work.

Dr. Stevenson: The Committee recommends that the Section be changed to read:

Section 1. For the transaction of scientific business,

there shall be one or more Sections, as many be determined from year to year by the Council.

I move that this recommendation be adopted. (Motion seconded and carried)

CHAPTER VII. DUTIES OF OFFICERS

The following addition is suggested to this Chapter, making a new Section 3:

Section 3. In case of death, resignation or disability of the President-Elect, during his term of office, his place shall be filled by the House of Delegates at the next annual meeting by election.

The office of Treasurer shall be abolished at the annual meeting of 1937, and its duties and responsibilities transferred to the Secretary who shall be called thenceforth Secretary-Treasurer.

Dr. Stevenson: The Committee recommends that the second paragraph of the new Section 3 be not adopted. I move the adoption of the new Section 3 to read as follows:

Section 3. In case of death, resignation or disability of the President-Elect, during his term of office, his place shall be filled by the House of Delegates at the next annual meeting by election.

(Motion seconded and carried.)

CHAPTER VII. Section 4 to become Section 5.

Dr. Stevenson: The Committee recommended that the old chapter be retained, with these changes: To omit the words "House of Delegates" in the sentence reading, He shall employ such assistants as may be ordered by the Council or House of Delegates, etc. To change the words "and at once turn it over to the Treasurer" to "and turn it over to the Treasurer as hereinbefore provided." The whole chapter to then read as follows:

Section 5. The Secretary shall attend the General Meetings of the Society and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be ex-officio Secretary of the Council. He shall be custodian of all records and papers belonging to the Society, except such as properly belong to the Treasurer, and shall keep account of and turn over monthly to the Treasurer all funds of the Society which come into his hands. He shall provide for the registration of the members and delegates at the annual session. He shall, with the cooperation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the state by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this society. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council, and shall make an annual report to the House of Delegates. The Secretary's report shall cover the fiscal year. He shall supply each component Society with the necessary blanks for making their annual reports; shall

keep an account with the component societies, charging against each society its assessment, collect the same, and turn it over to the Treasurer as hereinbefore provided. Acting with the committee on scientific work, he shall prepare and issues all programs. The amount of his salary shall be fixed by the Council.

I move the adoption of the section as recommended. (Motion seconded and carried)

NEW CHAPTER X. REFERENCE COMMITTEES

Dr. Stevenson: An entire new Chapter X on Reference Committees has been added. Dr. Camp calls my attention to the fact that the committees as listed are not correct and should read as follows:

Committee on reports of officers.

Committee on reports of councilors.

Committee on reports of Standing committees.

Committee on reports of Council committees.

Committee on Scientific Work, Social Security Problems, The Editor and Historian.

Resolutions Committee.

Committee on Miscellaneous Business.

Attendance Committee.

I move that the recommendation of the Committee be accepted. (Motion seconded and carried)

Other than the changes mentioned in this report we agree with the proposed recommendations and changes of the Committee on Constitution and By-Laws. I move the adoption of the report as a whole. (Motion seconded by Dr. M. A. Rydelski and carried.)

The President: We now come to unfinished business. The Secretary tells me there is none, so we will proceed to new business.

Secretary: It has always been customary to report to the House of Delegates the action of Committees during the annual meeting. I have a report handed to me by the Committee on Awards. The Scientific Exhibits are arranged under three classifications, and the Committee issues rewards in the form of a silver medal, bronze medal and certificates of merit in each classification.

Class I.

Silver Medal: S. William Becker.

Bronze Medal: Arthur F. Abt, Chester A. Farmer, and Miss Smith.

Certificates of Merit: Abraham Levinson, Harold O. Mahoney.

Class II.

Silver Medal: H. S. Henrickson, Chicago Municipal Tuberculosis Sanitarium.

Bronze Medal: Paul H. Holinger.

Certificates of Merit: L. M. Hilt and F. W. Light, Springfield.

Class III.

Silver Medal: Robert W. Keeton and Ford K. Hick.

Bronze Medal: Rollin T. Woodyatt.

Certificates of Merit: H. H. Zorn and O. U. Sisson, Illinois Pharmaceutical Association, Frank J. Jirka, Illinois State Department of Health; Sangamon County Medical Library.

Dr. Andy Hall, Mt. Vernon: I move the adoption of this report. (Motion seconded and carried)

Dr. J. S. Nagel, Chicago: I move that a rising vote of thanks be extended to the retiring President. (Motion seconded and carried)

Dr. W. E. Kittler: I move we adjourn *sine die*. (Motion seconded and carried)

The House of Delegates adjourned *sine die* at 11:45 A. M.

ESTIMATES HOSPITALS HAVE LOST 35,000 EMPLOYEES IN DEPRESSION

Faced with a demand for services greater than at any time in their history America's hospitals, because of their financial condition, are being forced to function with a personnel reduced by 35,000, according to John Glossinger, vice-president of the Kny-Scheerer Corporation.

Mr. Glossinger bases his figure on a study made by the government of 6,112,529 cases on relief which revealed that in this number there were 20,000 who previously were hospital employees. Since the total number of U. S. unemployed is variously estimated as between ten and twelve million people, he said he believed that his 35,000 figure is conservatively correct.

The study brought to light one fact heartening to all friends of American public health, according to Mr. Glossinger. It proved that of over six million individuals on relief, only about fifty were physicians and surgeons. This compared with one thousand lawyers, three thousand ministers and religious workers and more than 20,000 teachers.

WHO EATS THE TAXES?

A press dispatch from Washington the last of December stated that more than six million men and women are now on Uncle Sam's payroll. This meant approximately one out of every twenty persons in the United States is living off the federal government. Now add to this six million the number of persons on the payrolls of states, cities, counties, towns, school districts, etc.—that is, persons who gain their living from funds secured through taxes—and you have a fair idea of why your income is near the zero mark.

To justify this enormous payroll, it will be claimed that it is a matter of emergency relief. But have these excessive expenditures been made because the people of the United States asked them, or because well organized, active, energetic and vociferous minorities urged them? Did you ask for them? Do you know of any of your neighbors who did? Your community is typical of all in this country. In truth, have not the

demands for these excessive expenditures come from minorities who have imbibed freely of certain foreign theories?—*Committee on American Education.*

NEW CURE FOR STUBBORN WOUNDS RESULTS FROM CLUE GIVEN BY FLY

From a clue provided by an insect, entomologists of the U. S. Department of Agriculture have discovered a new way to heal stubborn wounds quickly, painlessly and cheaply. The new treatment is the application of a solution of allantoin a bland, odorless, harmless, and easily obtained product found in both insects and plants.

The insect that gave the clue to this discovery is one of the flies—in the maggot stage—that gained fame as a medical aid on World War battlefields, where an Army doctor found that wounds infested with maggots healed better and faster than wounds without them. Since then surgeons all over the world have used maggots in treating deep infections difficult to cure by ordinary surgery.

Government entomologists, who have developed methods for rearing and shipping sterile maggots to hospitals, have at the same time sought the secret of this maggot's power to heal. Dr. William Robinson, of the Bureau of Entomology and Plant Quarantine, now finds that allantoin, which is given off by the maggots as they work their way through a wound, is responsible for part of this power. Allantoin, Dr. Robinson says, is not a new discovery. Dr. C. J. Macalister, who used it successfully 23 years ago for ulcers, reported that European peasants had long applied the roots of comfrey, which contain allantoin to sores.

His recent tests, Dr. Robinson says, show that allantoin is particularly useful for non-healing wounds, such as chronic ulcers and extensive burns that refuse to mend. After a few treatments, pinkish granulation tissue begins to grow and soon the tissues are knitting together rapidly. A specially promising feature of the new treatment is that it can be made to control healing. Healing from the bottom up can be ensured in a deep wound by applying the allantoin solution in a small packing at the base of the wound and covering the sides with vaseline. General granulation can be promoted by filling the wound with gauze well saturated with the solution.

Dr. Robinson made his recent discovery by putting two and two together, he says. He knew that no organism, except man, does anything with the sole purpose of helping another organism. He knew also that ground embryonic tissue taken from various animals has healing properties and that allantoin is present in such tissue. Therefore, he reasoned, maggots heal man's wounds through some involuntary act—perhaps excretion—and possibly such excretions contain allantoin. Tests in the laboratory and practical applications in Washington, Pittsburgh, and New York hospitals proved the soundness of his conclusion that part of the maggot's healing power lies in the allantoin it pours into a wound.

DOCTORS OF AMERICA DONATE ONE MILLION DOLLARS A DAY TOWARD THE CARE OF THE INDIGENT

Has organized medicine been indifferent to the problem of medical care for the low income classes? An estimate based on numerous though somewhat limited studies places the value of services donated by the physicians of the United States to the care of the indigents and low income classes during the last few years at about one million dollars a day. Practically every institution offering service to these classes depends for its existence on the donated services of physicians. Reports from many studies indicate that in spite of the amount of medical care paid for at almost nominal rates by the FERA, by far the larger portion of the care actually received by the unemployed and many others not eligible to FERA benefits during the past year was given without charge by physicians. Certainly if there is any section of the people that has not been indifferent to the problem of medical care for indigents it has been the organized medical profession of the United States. State and county medical societies throughout the entire country are trying to find the best method of giving medical care to those unable to pay for it. A number of the experiments that offer the best promise of meeting this situation have been originated and are now being conducted by such medical societies. In all this discussion and experimenting, the fundamental necessity of maintaining the conditions on which good medical service depends has been kept uppermost. These experiments have shown that many of the methods of furnishing medical service by some of the proposed systems destroy the fundamental conditions of good service. For that reason organized medicine has opposed or sharply criticized the wholesale plans offered by social workers, philanthropists, employers and laymen, very few of whom have proved their devotion to those in whose interest they claim to act by any such economic sacrifice as has been made by members of the medical profession.—*Bureau of Medical Economics, American Medical Association, Chicago.*

DIAGNOSTIC GASTROSCOPY, WITH SPECIAL REFERENCE TO FLEXIBLE GASTROSCOPE

Of 2,000 gastric examinations, Rudolf Schindler, Chicago (*Journal A. M. A.*, Aug. 3, 1935) carried out approximately one-third of them with the flexible gastroscope. He found that this instrument has made it possible to visualize the interior of the stomach with safety and with relatively little discomfort to the patient. The flexible gastroscope affords an additional method for the direct morphologic diagnosis of gastric disease. Gastroscopy not only supplements the roentgen examination in the direct diagnosis of gastric ulcer and gastric neoplasm, but it aids greatly in their differential diagnosis. It also furnishes direct evidence of the progress of the benign lesions and of the degree of involvement in cases of neoplasm. Gastroscopy reveals gastritis and other changes in the gastric mucous membrane not discernible by other procedures.

Original Articles

THE CAREER OF THE HEART

RALPH A. KINSELLA, M. D.

ST. LOUIS, MO.

Death from heart failure at 55 occurs so frequently and with such dramatic suddenness, that the layman as well as the physician is deeply interested in the causes thereof. And it is not usually the weak or dissolute who comes to this untimely end, but most often the individual of vivid personality and definite capacity, whose loss we can least afford. Moreover, ill health may not be evident, but on the contrary vigor and aggressiveness may characterize such a person and make him overlook the commonplace symptoms that foretell the impending ruin.

It is useful for every physician to contemplate the career of the human heart and trace out its difficulties, so that even though he wait for science to point out the cures, he may increase the comfort of the patients and prevent the burdens that kill.

The heart is endowed with a remarkable capacity to endure. The malnutrition of infancy, and the ordinary infections and hazards of adult life leave the heart usually unscathed, maintaining its own organization, directing its own rate and rhythm. The sources of concern to the heart are remarkably few. In childhood, rheumatic fever and the injuries subsequent thereto; later the implantation of bacteria and the disturbances due to hyperthyroidism, and finally the asphyxia of the heart due to the choking of its own blood supply. The damages due to syphilis are relatively uncommon except in the negro. Contrary to an often-expressed belief, the known streptococcal diseases do not cause heart trouble.

It is the purpose of this discussion to review these factors and visualize the disturbances which follow.

In the Mississippi Valley rheumatic fever is much less common than in the New England States and in Eastern Canada. During the past 12 years only 74 patients with acute rheumatic fever have been admitted to St. Mary's Hospital in St. Louis, while in New York City in a hospital of similar capacity, over half that number

would be admitted in a single year. 75 per cent. of these patients are stricken in childhood at an average age of 10, and this feature is usual for the diseases throughout the United States. Acute rheumatic fever is a disease of remarkable individuality, and the cardiac damage is the chief feature of the disease. The articular manifestations are entirely discarded, but the damage in the heart is permanent though not necessarily fatal. When a heart has once been thus injured, its career is uncertain and it is susceptible not only to recurrences of the same disease, but to inroads of other infectious processes which are perhaps more certain to occur. For example, the individual who has mitral stenosis, the result of rheumatic fever, may, it is true, escape subsequent damage and live to an old age; but more frequently there are many setbacks, the causes of which excite the curiosity of the investigator. In 44 patients coming to necropsy and having either mitral stenosis or a history of recent rheumatic fever, during the same 12 years, only 7 showed the lesions in the heart atypical of rheumatic fever, and the average age of these seven was 12.

Thus, about one heart in 6 succumbs to the attack of rheumatic fever, as far as our experience in the Mississippi Valley is concerned, and this death is at an early age. What of the other five? The question has been discussed in the recent literature. Not all hearts injured by the agent of rheumatic fever, develop mitral stenosis. It is usual, on the other hand, to regard all cases of mitral stenosis as having sprung from a rheumatic injury. In the experience of the Medical Service of Presbyterian Hospital, New York City, about 45% of patients with mitral stenosis show, at autopsy, evidence of fresh rheumatic activity in the heart muscle. In the Department of Pathology of St. Louis University only three of 20 patients coming to necropsy and showing marked mitral stenosis, also showed evidence of active rheumatic fever in the heart muscle. What are the criteria on which the diagnosis of rheumatic carditis is made?

We must conclude that rheumatic fever is a disease of diminished virulence in the Mississippi Valley, and that the recurrences are less frequent. The patients who escaped early death lived to an average age of 44. The recurrence of disability of the heart is not always therefore

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due to return of the rheumatic agent. Intercurrent infections, such as pneumonia, infections of the middle ear, bacillary dysentery and the like, find the rheumatic heart poorly defended and infection apparently penetrates such a heart with comparative ease. In the 17 patients having mitral stenosis who did not have evidence of fresh activity of rheumatic fever, six showed evidence of acute infection of the cardiac muscle as a complication of an acute infectious process elsewhere in the body, while 11 died of an apparent breakdown of the cardiac mechanism, the result of the blockage of the mitral valve.

The pathogenesis of early lesion on the valve which is the forerunner of the later thickening which causes the valve either to leak or be obstructed, has never been satisfactorily explained. One may see at autopsy, tiny, translucent, slightly hemorrhagic beads along the rim of closure of the mitral valve, whose intimate structure consists of fibrin and red blood cells on a broken endocardial surface. If rheumatic fever is present, these apparently mechanical damages are invaded by the cells characteristic of rheumatic fever. Many years after these little warty excrescences have apparently healed they may be infected by bacteria.

Of tragic significance is the implantation of bacteria on the heart valve that has been previously damaged—usually by rheumatic fever, but occasionally by congenital defects, or by acquired syphilis.

The circumstances under which bacterial invasion of the heart valve occurs are often clearly suggested, but frequently are obscure. That is, there is frequently an infection such as otitis media, or tonsillitis, which seems to bring about an invasion of the blood stream with bacteria which then become implanted on the old valvular injury. In those patients who describe no such preceding illness, the pathogenesis is not clear. The resulting disease is called bacterial endocarditis. A gastro-intestinal route has been suggested in the results of recent work. The experiments by which bacterial endocarditis has been produced and cured in dogs are interesting.

Unfortunately, these results have not been translated as yet into successful treatment of human cases.

The disturbances created by hyperactivity of the thyroid gland are of the nature of disrup-

tions of the cardiac rhythm, thereby seriously impairing the efficiency of the heart. Experimental evidence of a lesion in the heart muscle, produced by the inoculation of thyroxin is not duplicated in human cases. The threat of such involvement of the heart in the general picture of thyrotoxicosis constitutes one of the strong indications for surgical removal of the gland. In those patients who have suffered for many years from attacks of hyperthyroidism, and in whom auricular fibrillation has become a fixed disturbance, it is very important to regard intercurrent infections as the factors contributing to cardiac breakdown, just as in the rheumatic heart collapse may be due not to recurrence of the rheumatic disease, but to the various infections that assail the body during its career. So in patients with goiter, these same infections are probably more important than goiter itself in bringing about a combination of effects which weaken the heart and destroy its capacity to operate. As a matter of fact, in both the rheumatic heart and in the so-called thyroid heart there is a remarkable capacity to survive unless the insults of repeated infection or trauma break down the mechanism.

Against the changes of age, the heart has no defense. Its ancestry, so to speak, is extremely important, and it is common to record the history of families all members of which have died of heart disease at an early age. The factors which bring about the deterioration of the blood vessels in the heart are not yet clearly defined. The deterioration of the arteries is widespread thruout the body. There is gradual insufficiency of the circulation and inability to meet sudden demands. The muscular activity which depends on arterial supply is thereby impaired. The baseball player and the boxer lose the speed of footwork necessary in their work. The heart also depends on such efficient arterial supply.

The factors which affect arterial constriction, such as the adrenal factor and the pituitary factor, called into play by emotions, operate more frequently, no doubt, in the warm-hearted, the sensitive and the quick-tempered than in the phlegmatic, apathetic individual. The heart must respond to the quick demands of excitement and sudden effort and to exhausting worry. It is usual to find the man with angina pectoris or coronary occlusion to be excitable, alert and

emotional to a more marked extent than his fellow whose heart remains undisturbed until old age. An inspection of the heart at autopsy after death from occlusion of its arteries will reveal the particular type of anatomical change.

The terminology of heart failure from coronary occlusion is sometimes vague. Angina pectoris may be a symptom without demonstrable anatomical basis, even when the attack is fatal. It is extremely difficult to determine, when examining the patient, whether the cause of his distress is a spasmodic effect in the coronary system impeding blood-flow into the muscle of the heart, or is an actual plugging of the line-of-supply with a clot of blood or a piece of desquamated lining of the artery. If a spasmodic effect, it is not possible to say whether the coronary vessels will be found to be intact at autopsy or in a state of sclerosis, which heightens the occluding effect of mild spasm or produces the effect of occlusion because such sclerosed arteries are unable to meet sudden muscular demands. Levy has proposed the very adroit expression of "acute coronary insufficiency" to meet this demand for a diagnostic statement. "Acute coronary insufficiency" describes the state of the heart when its blood supply is interfered with either by spasm, relative occlusion of sclerotic vessels during a moment of unusual demand or actual plugging of the coronary branch. The result of this asphyxia of the heart muscle is the pain so well known to the practitioner of medicine. Curiously, there are at least 50% of such patients who have symptoms other than pain. These are: a sensation of fulness under the sternum, sudden attacks of breathlessness, unexpected feelings of great weakness and curious attacks of epigastric distension usually attended by a feeling of weakness or breathlessness. Under all the diagnoses of such cases we have filed in St. Mary's Hospital in the past 5 years, 143 patients, 25% of whom died. This type of heart disease far exceeds all other types in frequency. This affection of the heart is also fatal in a much shorter time than rheumatic heart disease is fatal. Of 195 patients studied in the past 5 years by the writer, 50% have died. The patients whose discomfort is brought about by effort are usually a little more fortunate and live longer, since effort can be avoided.

The changes which take place in the heart are degenerative in character. Scars replace old hemorrhage and thrombosis. The pericardial friction is the best physical sign of thrombosis or permanent occlusion.

Promptness of recognition of the true condition is essential. There are still too many patients in whom the attention of the physicians is mistakenly focused on epigastric distress leading to a diagnosis of disease of the gall bladder or on a respiratory difficulty with fever, leading to a diagnosis of pneumonia.

Promptness of adequate treatment undoubtedly saves many lives. By adequate treatment we mean complete rest, usually with the aid of half a grain of morphine sulfate. Adrenalin is contra-indicated. Digitalis has a place in the treatment of the acute dilatation and its administration should be by the intravenous route. Digitalis is not advised in the later, prolonged treatment. For the later treatment, the derivatives of caffeine and theobromine are useful. The use of small doses of nitroglycerin, 4 to 5 times daily, have been found advantageous, according to a recent report by Riseman and Brown. Thyroidectomy has not lived up to early expectations.

As in the patient who has a rheumatic heart or the patient with long-standing fibrillation due to hyperthyroidism, one of the most important functions of the clinician is to watch for the presence of infections in the body, notably those in the urinary tract where such infections can easily pass unnoticed.

Those rare hearts that escape the attacks of infectious processes will carry their owners to old age. Acute rheumatic fever, bacterial endocarditis, hyperthyroidism and the effects of deterioration of the coronary arteries, are the chief hazards which must be met. These, and the needless hurry and worry and indulgence in emotion are the burdens that threaten the career of the human heart.

Housewife—"Look here, my man, why do you always come to my house to beg?"

Tramp—"Doctor's orders, madam."

Housewife—"Doctor's orders?"

Tramp—"He told me that when I found food that agreed with me I should stick to it."—*Pearson's Weekly*.

THE HEART IN THYROID DYSFUNCTION

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That there is a close relationship between abnormal thyroid function and heart disturbance has been known for many years. Indeed, when exophthalmic goiter was first recognized, it was taken to be a disease of the heart. There has been much investigation in recent years as to the nature of this relationship. The diagnosis and proper treatment of the thyroid dysfunction underlying the cardiac disturbance is of prime importance, since direct attack on the cardiac condition is ineffective. The subject matter of this address falls naturally into two parts, namely 1, the heart in thyrotoxicosis, and 2, the heart in myxedema.

1. THE HEART IN THYROTOXICOSIS

Morbid Physiology of Thyrotoxicosis:—The result of increased activity of the thyroid gland as it occurs in hyperthyroidism is an elevated metabolism. This implies that more oxygen is used up by the tissues per unit time, and it must, therefore, be supplied by the circulating blood.

To meet this demand the output of the heart is increased. It is established that the minute-output of the normal heart varies directly with the rate of metabolism, so that with the patient at complete rest the heart may be working as hard as if he were walking continuously at the rate of four miles per hour for twenty-four hours, every day¹. Moreover, the body in thyrotoxicosis is an inefficient machine, so that on exertion there is disproportionate rise in oxygen consumption above the already high resting level, with a corresponding excessive increase in the work of the heart above the high basal level¹.

This increased cardiac output, though necessary to supply the required amount of oxygen to the tissues, is not altogether due directly to an increased call from the tissues, but, in part at least, to an increase in the intrinsic metabolism of the heart itself. Hearts of animals fed on thyroid continue to beat more rapidly than normal, when excised and removed from the body.

When section of the bundle of His is done, producing complete heart block, the rate of the isolated ventricle is greater than normal. Even tissue cultures of the heart muscle fibers of the embryo chick beat more vigorously under the influence of thyroxine. The increased intrinsic metabolism of the heart is shown by the greater oxygen consumption of the hearts of thyroid-fed animals. The accumulation of lactic acid or cutting off the oxygen supply results much more quickly in the cessation of the contractions of such isolated hearts^{2, 3, 4}. The output of the heart may be increased by an increase in the rate, or by an increased output per beat. In hyperthyroidism both phenomena are in use. Tachycardia is one of the cardinal symptoms in thyrotoxicosis, and is present in practically every case.

Pathological Changes in the Heart:—Evidence as to direct damage to the heart has been sought from histological studies after death. Goodall⁵ described necrotic heart fibers infiltrated with round cells. Rake and McEachern⁶ found similar changes in five of twenty-seven cases, but in three of these there was also rheumatic or syphilitic heart disease. Weller⁷ in thirty-five cases of uncomplicated thyrotoxicosis found patches of fibrosis of the heart in 80% and cellular infiltration in 31%, but similar changes were observed in controls in 52% and 17%, respectively. Eight of the seventeen thyroid-fed guinea pigs⁶ had patches of necrotic heart muscle surrounded by round cells, but all of these died of bronchopneumonia. Of the nine without pneumonia, only one had a few small patches of necrosis. The patches of necrotic heart muscle described by Weller are, no doubt, in the late stage. The large proportion of normal controls revealing similar changes robs Weller's figures of significance.

Rake and McEachern concluded that both autopsy and experimental material point to the fact that hyperthyroidism by itself produces no specific lesions in the myocardium. It is conceivable that damage done on the one hand by physiological wear and tear, and on the other hand by any associated infection or other disease tends to be more accentuated in the individual with hyperthyroidism than in the normal one. In the few cases in which profound damage was found without any coexisting complicating dis-

From the Cardiac Clinic, University of Illinois, College of Medicine, Chicago.

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ease, it is difficult to be certain whether the toxin of the thyroid gland produced it. Thus, no cardiac lesions due to thyrotoxicosis have yet been demonstrated, except for moderate cardiac enlargement, with hypertrophy and dilatation of all chambers, especially of the left ventricle^{6, 8}; no doubt due to persistent overwork, which disappears after a successful thyroidectomy.

Clinical Features:—It has been indicated that hyperthyroidism per se seldom produces so-called "thyroid heart disease," but when superimposed upon either hypertensive, rheumatic, syphilitic, or arteriosclerotic heart, gross cardiovascular derangements are often seen^{9, 10}. Eggleston¹¹ termed these patients "Thyrocardiacs"—a combination of hyperthyroidism and independent heart disease. Following the relief of the hyperthyroidism, the symptoms may either improve or disappear entirely.

The effect, then, of thyrotoxicosis on the heart depends greatly on its condition before the onset of the thyroid dysfunction. There is always overaction of the heart, usually immediately evident on examining the chest, and felt by the patient as palpitation, especially upon emotion or exertion. This overactivity may impart a slight vibration to the apex beat, not at all unlike that of an apical thrill. This is more frequently seen in women. Cardiac enlargement is more often apparent than real, because the size of the heart, as obtained by percussion, is exaggerated by its overactivity and very often does not check with the measurements obtained by roentgen-ray¹⁰. However, in long-standing cases the enlargement is quite real, even in the absence of independent heart disease.

The heart sounds, especially the first, are booming, loud and snappy. A systolic murmur is often found at the pulmonary area. This murmur often is of a "tearing" quality, almost resembling a pericardial friction rub. This extrinsic cardiac sound is thought by some¹² to be caused by the dilated pulmonary conus which is frequently found in thyrotoxicosis. Pulsation in the episternal notch and vessels of the neck may be fairly conspicuous.

Auricular fibrillation, especially paroxysmal, ultimately supervenes in many cases of thyrotoxicosis. It is twice as frequent in males as in females,¹ and its incidence increases with the patient's age and with the duration of the dis-

ease. It also appears transiently soon after thyroidectomy in about 7% of the cases.¹³ It has been suggested that the liability of the thyrotoxic heart to develop auricular fibrillation is due to its increased susceptibility to the action of adrenalin, since in thyroid-fed rabbits an injection of adrenalin often causes the onset of auricular fibrillation.⁹ It disappears spontaneously after thyroidectomy in 50% of the cases, which speaks for the fact that it is due to functional change in the heart muscle, and not structural. If it persists one week after the operation, quinidine should be administered. This procedure restores normal rhythm to about 90% of the cases thus treated. For the most part, in the remainder, there is probably an independent heart condition that causes it, as hypertension, coronary disease, cardiac hypertrophy, or rheumatic heart disease.⁹

Auricular flutter is not common. Levine⁹ reported six cases of flutter out of 69 cases, all disappearing spontaneously after operation. Extrasystoles are rather rare.¹⁴ Cases with complete heart block have been described,¹⁵ but this was due to independent heart disease.

Hence, the only irregularity that is characteristic, and which frequently disappears after thyroidectomy, is auricular fibrillation, transient or permanent. If persistent for a considerable time, it causes cardiac failure even in the young thyrotoxic patient.

The blood pressure in thyrotoxicosis shows a slight rise in the systolic and a slight fall in the diastolic. Hurxthal¹⁶ has shown that there is only a slight change in the blood pressure following thyroidectomy in hyperthyroid patients. It was rare that a marked hypertension disappeared after the operation. Parkinson¹⁷ has recently reported 100 cases of hyperpiesis in whom there was some evidence of thyrotoxicosis. He suggested that thyrotoxicosis may be a cause for hypertension, but the connection between the two is not proven. Rosenblum⁹ found no significant changes in the blood pressure in 69 patients after thyroidectomy. Davis¹⁸ observed in 29 cases after total thyroidectomy that the blood pressure sometimes rose, sometimes fell, and sometimes was unchanged. There is no relationship between the level of the blood pressure and the level of the basal metabolism. Contrawise, hypertension does not produce

hyperthyroidism, for most hypertensives have normal metabolic rates and normal thyroids. Hypertension and hyperthyroidism afford frequent practical problems in diagnosis, as many features are common to both conditions. At times it is difficult to tell clinically whether there is any additional hyperthyroidism in a patient who has hypertension; and, occasionally, even after the results of metabolism determination are available, the diagnosis may still be in doubt.⁹ It thus may be concluded that there is as yet no certain evidence that thyrotoxicosis causes a marked rise in the systolic, or a conspicuous fall in the diastolic, blood pressure.

Angina pectoris in association with hyperthyroidism has been referred to in recent years.⁹ When it is appreciated that the added drive of the heart is going on constantly in hyperthyroidism, this symptom is not at all surprising. *Angina pectoris* is due to coronary sclerosis, which cannot tolerate the elevated metabolism, for even at rest these patients may be compared to individuals who are exerting some effort. After thyroidectomy, the angina disappears entirely or is very much relieved. At times the angina is experienced only during an attack of paroxysmal fibrillation. Since the basis for angina is primarily diseased coronary arteries, one almost never sees angina in the young thyrotoxic, regardless of the severity of the thyroid dysfunction, heart rate or rhythm.

Heart failure is almost never seen in patients with perfectly normal and regular hearts, for the uncomplicated heart with sinus rhythm is able to withstand the strain of the perpetual increase in its work in thyrotoxicosis.^{9,10} But if there is present independent cardiovascular disease, heart failure takes place. This is the reason why in some patients the most severe and even fatal thyrotoxic crisis may arise without the least sign of heart failure, while in others the presenting symptoms may be those of heart failure, and the evidence of thyrotoxicosis may readily be missed—masked hyperthyroidism.¹⁹

The latter cases are seen, for the most part, in people beyond middle age with toxic adenoma and with probably damaged cardiovascular systems, while the former group belongs mostly to the exophthalmic type of hyperthyroidism occurring in people younger than forty, with nor-

mal cardiovascular systems. Hence, the difference in reaction of the heart in exophthalmic goiter and in toxic adenoma is due to a difference in the heart, not in the thyroid. Of 72 thyrotoxic patients over the age of forty,² heart failure was present in 28 (39%), while in 128 under forty years, failure was present in only nine (7%). Still more illuminating is the fact that of the nine patients with heart failure under the age of forty,² five had mitral stenosis, one, rheumatic earditis at postmortem, a seventh had syphilitic aortitis, and in only two could no definite evidence of associated heart disease be found. The onset of auricular fibrillation in thyrotoxicosis is also an important factor in causing cardiac failure, for if persistent and prolonged, it will cause failure even of the perfectly normal heart.¹¹

Roentgenologic studies of the heart shadow in hyperthyroidism are somewhat conflicting. Some authors²⁰ report that the size of the heart in toxic goiter was not appreciably different than in the non-toxic goiter when similar age-groups were compared. They merely call attention to the size of the heart tending to be larger in older patients with coincident cardiovascular disease. Parkinson and Cockson,²¹ on the other hand, found cardiac enlargement in 45% of 130 cases of hyperthyroidism. The enlargement is chiefly to the left; the pulmonary arc is somewhat prominent, but the retrocardiac space is normal. Margolis and his associates²² found that at times the anteroposterior cardiac silhouette partially simulated the "mitral configuration." The heavy hili and the enlarged left auricle, seen in mitral stenosis, are not present in hyperthyroidism. There was nothing characteristic of the shape of the heart itself, exclusive of the vascular pedicle. When the heart was enlarged, configuration suggested bilateral increase.

Increased prominence of the pulmonary artery was found by them in 54% of the cases. The cause of the latter is unknown. In about three-fourths of the cases this abnormality disappeared one to seven months following operation, and there was a tendency for the size of the heart to return to normal. Cardiac pulsation is believed by Rösler²³ to be characteristic, in that the systolic contraction is quicker than normal, that it is not wave-like as in the normal, but

that the whole ventricle seems to contract at the same time. This, too, disappears *after* the relief of the hyperthyroidism.

Electrocardiographic studies of the heart in hyperthyroidism show no gross abnormalities. Rose and his associates²⁴ showed that large P-waves are common in hyperthyroidism, and that they are reduced to less than 3 mm. after successful thyroidectomy. The T-waves in hyperthyroidism are not characteristically larger than normal, nor do they become smaller after thyroidectomy. Transient inversion of the T-wave may occur. The electrocardiographic changes do not seem to be related to changes in heart size, postoperative improvement, duration or severity of the thyrotoxicosis, age, or state of the cardiac function. Partial heart block⁵ and marked slurring of the R-waves²⁵ have been reported, but not confirmed. Hamburger²⁶ claimed that tall P- and T-waves indicate high sympathetic tone, not heart disease.

The prognosis is bad in the absence of partial thyroidectomy. Especially is this true of the "thyrocardiacs." It is also true of the perfectly normal heart, once persistent fibrillation has set in. There is usually little or no response to treatment by rest and digitalis when once auricular fibrillation or congestive failure, or both have appeared. Partial thyroidectomy is the only procedure that offers hope for improvement or complete cure, depending considerably on the status of the cardiovascular system at operation. The main aim should be early operative interference, before heart failure sets in.

The operative risk is much greater once congestive failure has set in, but the risk of not operating is still greater. In this type of case the preoperative regime should also include diuretics to render the patient less edematous. In successful cases there is a dramatic improvement in the congestive failure, which often disappears in a few days. Auricular fibrillation disappears spontaneously in one-half of the cases after operation, and in most of the remainder it can be dispelled by quinidine. In patients observed for years after successful thyroidectomy there was no further evidence of heart disease, unless independent heart disease was previously present.^{27,9}

2. THE HEART IN MYXEDEMA

While the cardiac complications of thyro-

toxicosis have been known since hyperthyroidism was first recognized, it has only recently been shown that the heart is usually abnormal in myxedema.

Morbid Physiology of Myxedema: According to Means,²⁸ there is a reduction of the rate of the general metabolism and there is a parallel reduction in minute volume of blood flow, shown clinically by slow pulse and low pulse pressure. There is a disturbance in the distribution of the body water, giving a decrease in plasma volume and an increase in tissue fluids. Both plasma and tissues shown an increase in protein storage. Anemia is almost always present. The circulatory load upon the heart is clearly diminished. Nevertheless, the heart suffers. It becomes weak and flabby, as do the skeletal muscles of the indolent.²⁸

Pathology of the Heart in Myxedema: No definite conclusions have been reached as to the nature of the cardiac involvement. Dilatation of the heart, myxedematous changes in the heart muscle, and pericardial effusion have all been suggested. The best and most complete pathological description of myxedema cases is to be found in the report of the Clinical Society of London, published in 1888.²⁹ The findings in twenty cases are reviewed, showing hypertrophy of the left ventricle in a third of the cases. In more than half there was atheroma of the arteries. In three of the nine cases that were studied microscopically, interstitial myocarditis was found.

In a report from the Massachusetts General Hospital,³⁰ records of five autopsies of myxedema patients were studied. Four showed interstitial edema with more or less fibrosis of the heart muscle, and the fifth showed fibrosis only. It seems likely that the edematous condition found in other tissues of myxedematous patients is also found in the heart muscle. Therefore, the changes in the heart should be considered as part of myxedema and not a separate entity.³⁰ On the basis of the facts above, one is justified in making the tentative assumption that thyroid extract decreases the size of the heart in myxedema by causing a loss of interstitial edema, and by increasing the muscle tonus.

It has been suggested that pericardial effusion may account for the size of the heart in myxedema. This is of interest, in view of the reports

that small amounts of fluid in the pericardial cavity were not uncommon in the cases autopsied.^{29,30} In most cases, however, neither the clinical findings nor the roentgenograms of the heart are consistent with significant amounts of pericardial fluid.

Clinical Features: At present there is no uniform opinion as to the signs and symptoms of the heart in myxedema. Zondek,³¹ who was the first to call attention to the heart in myxedema, observed cardiac dilatation, slow and indolent cardiac action, low voltage of the auricular and ventricular complexes of the electrocardiogram, but no evidence of cardiac embarrassment. All the findings disappeared entirely after treatment with thyroid extract. The first paper on this subject in this country was published by Fahr.³² His case, on the contrary, had all the signs and symptoms of decompensation, including orthopnea, ascites, large liver, and rales at the lung bases. Previous trial with digitalis for three weeks gave no improvement, but the signs and symptoms disappeared after treatment with thyroid extract.

Many articles have appeared since in the American literature and they reveal a certain amount of confusion concerning the true nature of the cardiac findings and symptoms. Hurxthal³³ reports a case of myxedema with congestive failure and polyserous effusion. He suggests that the appearance of the congestive failure was partly due to the myxedema heart and partly to the mechanical embarrassment of the circulation, occasioned by the accumulation of effusion, which is a result of the myxedema.

The prevailing opinion is that, though many patients may have slight dyspnea, congestive failure is rare. On the other hand, the type of dilatation described by Zondek originally is common.²⁸ In fact, to some degree, it is nearly always present in myxedema, and the abnormality reveals itself chiefly by the cardiac enlargement and the electrocardiographic changes.²⁸

In their discussion, Lerman and his associates gathered the impression from the literature that only the cases reported by Zondek, Fahr and others, in which photographs or findings of roentgenograms are given, are all thoroughly genuine. They believe that Fahr emphasizes the point of cardiac failure to a greater extent than his published findings warrant. In some

of his cases they state, dyspnea and edema could well have been a part of the general picture of myxedema, rather than due to cardiac failure.³⁰

Their studies indicate that cardiac failure due to myxedema is uncommon and slight, if present. It is practically always associated with hypertension and arteriosclerosis. One of our cases showed evidence of marked decompensation. This patient was 53 years old, and had a moderately severe hypertension. Digitalis failed to improve her condition. We finally discovered



Fig. 1. A. Two meter roentgenogram plate taken when basal metabolic rate was minus 27, and patient showed symptoms of myxedema. There was no evidence of cardiac embarrassment.



Fig. 1. B. Two meter roentgenogram plate of the same patient twelve weeks after thyroid medication, the basal metabolic rate being plus ten. All signs and symptoms of myxedema disappeared. Note the moderate amount of shrinkage.

that she had myxedema. She compensated completely after several weeks of thyroid therapy. The other three cases that came under our observation did not show cardiac embarrassment. Figures 1 and 2 represent one of these cases.

The heart is usually enlarged and it decreases in size when thyroid is administered, and the change in the cardiac shadow is of diagnostic importance. The enlargement is usually transverse without any particular shape. The shrinkage may be from 1 to 6 cm., but is usually proportionate to the degree of enlargement.³ Figure 1 represents the shadow of the heart of one

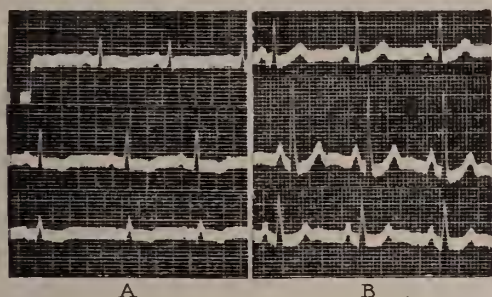


Fig. 2. A. Electrocardiogram of the patient's heart on the day when roentgenogram 1A was taken. B. This tracing was taken on the day when roentgenogram 1B was taken. It is an excellent example of the changes in the heart muscle following thyroid therapy.

of our patients with myxedema, before and after thyroid medication. Failure to show shrinkage after medication may be due to either a long-standing hypothyroidism or associated arteriosclerotic heart disease, or to the fact that the heart was not enlarged before the treatment.

The electrocardiogram is always abnormal. It typically reveals diminution in the size of all the waves. The voltage of the QRS complex is low, and the T-waves are flat or inverted. All these changes disappear after treatment with thyroid. The greatest return to normal occurs in those patients with most marked shrinkage of the size of the heart. The abnormalities in the electrocardiogram are probably not due to increased skin resistance, but to changes in the conduction system of the myocardium.^{30,34} Figure 2 is the electrocardiogram of the heart represented in Figure 1. It is an excellent example of the change in conductivity of the heart following thyroid medication.

Blood pressure changes were not characteristic. In the presence of cardiac dilatation, the blood pressure was found to be normal or subnormal. In those cases in which the pressure was particularly low, it tended to rise after the treatment. In the cases in which hypertension was present, it tended to decrease under treatment.³⁵

Coronary sclerosis is common in myxedematous patients but usually causes no symptoms, since the heart does comparatively little work and the narrowed coronary arteries are able to deliver enough blood for its needs. However, one has to make a definite distinction between those hearts in which coronary sclerosis predominates and those in which the myxedematous changes in the heart muscle predominate. While the latter improves distinctly and rapidly when thyroid is given, the former is made worse. The narrowed coronary arteries become inefficient when the increased metabolism calls for a greater cardiac output. Occasionally angina pectoris is first experienced when the dose of thyroid extract is raised. Therefore, while thyroid therapy is a boon to the heart in myxedema, it should be given with care and be discontinued as soon as precordial pain appears.¹

Arrhythmias are very rare in myxedema hearts. Curiously enough, two cases with auricular fibrillation yielding too thyroid medication are reported. One of the cases also had moderate congestive failure.^{36,37} More cases will have to be observed and studied before a possible interpretation of such a paradoxical phenomenon is undertaken.

Finally, it seems likely that the cardiac enlargement and the electrocardiographic changes indicate impaired cardiac efficiency. But, at the same time, the lowered metabolism and the lessened demand of the tissues for oxygen-containing blood allow the heart to diminish its work to a level which it is easily able to maintain, inefficient as it is.

CONCLUSIONS

1. The heart in the thyrotoxicosis suffers from overwork because of the demands by the tissues for more oxygen, and also because of the increase in the intrinsic metabolism of its own fibers.

The increased intrinsic metabolism of the heart is shown by the greater oxygen consumption of the hearts of thyroid-fed animals.

No cardiac lesions due directly to thyrotoxicosis have been demonstrated, except for the moderate hypertrophy of the left ventricle with dilatation of all chambers, which disappears after a successful thyroidectomy.

Hyperthyroidism per se seldom produces con-

gestive heart failure. The latter may develop under the following conditions:

(a) With auricular fibrillation in a normal heart.

(b) With auricular fibrillation and coincident cardiovascular disease.

(c) With sinus rhythm and coincident cardiovascular disease.

The *systolic* blood pressure is slightly elevated, while the *diastolic* is slightly lowered. Hyperthyroidism is not a cause of hypertension.

Angina is brought out or intensified, but not caused directly by this thyroid dysfunction.

Auricular fibrillation is commonly seen. That it is not due to structural changes is suggested by the fact that in 50% of the cases it disappears spontaneously after thyroidectomy.

2. In *myxedema*, the circulatory load on the heart is definitely diminished, because of the reduction of the rate of the general metabolism, and of the parallel reduction in the minute volume of the blood flow.

Essentially, the pathology of the heart in *myxedema* is interstitial edema, as in the rest of the tissues.

Cardiac dilatation and electrocardiogram of low voltage, disappearing after thyroid therapy, are the main clinical features.

The *shrinkage* after thyroid treatment is probably due to loss of fluid, and to increase of muscular tone.

Congestive heart failure in *myxedema* is uncommon; the dyspnea and edema may well be a part of the general picture of *myxedema*, or of associated hypertension or arteriosclerosis.

Thyroid medication, carefully administered, is a great boon to the heart in *myxedema*.

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DISEASES OF THE LOWER COLON

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This paper does not attempt to cover completely the field of proctology, but is merely a discussion of some of the more common diseases encountered by the general practitioner, with a discussion of methods of diagnosis and treatment.¹

Histories obtained in cases of proctologic lesions are unreliable. They are of value only in indicating the existence of disease of the lower part of the bowel. Blood, pus, mucus, constipation and diarrhea are symptoms which may accompany almost any pathologic condition in the gastrointestinal tract. I have seen cases in which a history of previous operations for hemorrhoids and resulting stricture was obtained and the lesion proved to be epithelioma of the anus. Constipation or diarrhea, one or both, may be the only symptom in amebic or chronic ulcerative colitis. The history and the presence of hemorrhoids with bleeding may hide a carcinoma higher in the bowel. Severe pain, associated with bleeding and a visible fissure, may mask chronic ulcerative colitis. A patient may have no complaint referable to the rectum and yet be suffering from severe secondary anemia attributable to slow bleeding from hemorrhoids which are detected only if they are looked for. I recall a case which was tentatively diagnosed as thrombosed hemorrhoids. The pain was so terrific that a digital examination was not done. The condition, however, proved to be caused by a piece of chicken bone 2 inches (5.0 cm.) long which had turned crosswise and lodged just above the external sphincter. A history then is taken, not with any idea of making a diagnosis, but as a check on any symptoms which might explain the patient's condition.

Methods of examination and common findings. In preparing the patient for examination the bowel must be thoroughly emptied. Oil should not be given by mouth inasmuch as it makes a messy field, and the instruments are not easily cleaned. Saline and drastic laxatives should be omitted. An enema is usually sufficient. The patient should not eat supper but breakfast is permitted, if the examination is to be done in the morning. The enema is given

about an hour before examination, and if repeated until the water returns clear, the bowel usually will be empty, and any fluid remaining can be removed by suction at the time of examination.

For performing the examination the inverted position gives more satisfactory exposure than any other. The patient is inverted on a table especially constructed for the purpose. The buttocks are spread apart gently and thorough inspection is carried out. Careful observation is made for new growths, swelling, scars, ulcers, abrasions, fissures and thickening of the rugae about the anus and buttocks. Inspection usually will disclose any pathologic condition or abnormality outside the anal canal.

New growths may be benign or malignant. Epithelioma of the anus is probably the most painful of all anal lesions. Digital examination will be out of the question. The lesion bleeds easily on trauma and has a firm, piled up, rounded edge. It is somewhat pinkish in color. Benign new growths are usually verruca, possibly specific in origin, although the Wassermann reaction on the blood is frequently negative. These are best treated by cautery and excision.

A swelling may be an abscess or hemorrhoid. An abscess is of course easily recognized as it is likely to be red, hot and painful and to have given recent symptoms. Fluctuation may be present. In most cases the origin will be found in one of the crypts of Morgagni and a diagnosis of ischiorectal abscess is justified. However, the possibility of an old pelvic inflammatory lesion being the source must be kept in mind. Hemorrhoids are recognized easily and I shall not go into an extended discussion except to say that internal hemorrhoids cannot as a rule be diagnosed by inspection or palpation unless they are prolapsed or thrombosed.

Scars point to an old healed lesion of some sort, operative or otherwise, and in the presence of proper history one should bear in mind the possibility of fistula, and if the scar is in the sacral region, pilonidal cyst. If a fistula is present, a probe usually will follow the sinus tract into the anus. Fistulous tracts with the external opening posterior to a line drawn through the tuberosities of the ischium will usually curve around to the midline and enter the

anal canal in the posterior commissure. Those with the external opening anterior to the line will lead directly into the anal canal. In the presence of openings both anterior and posterior to the line there is usually a fistulous tract connecting the anterior secondary opening with the posterior and a common tract leading into the anal canal in the posterior commissure. A fistula originating in the posterior commissure may circle the anus and present a most difficult problem. Inasmuch as the fistula has its origin in one of the anal crypts, the primary internal opening is never up in the rectum. The connective tissue about the wall of the bowel, however, is very loose, and the too enthusiastic surgeon, when probing from the external sinus toward the internal can easily pass his probe through this and think he has discovered the internal opening; he then is mystified when the patient returns a few months following operation with the same trouble.

Ulcers outside the anus are rare, and are most likely to be confused with the monstrosity of an improperly performed Whitehead's operation, in which the mucous membrane has been pulled outside the anal canal so that the patient sits on it. In this case it is red, moist, and angry-looking, and will lead the unwary surgeon to disaster.

An abrasion, most commonly found in the posterior commissure, though at times in the anterior commissure, is seen on separating the buttocks and slightly spreading the anus. It is intensely painful and is distinguished from a fissure by history and lack of scar tissue.

A fissure often is indicated by a small tag of tissue, which, when spread apart, exposes an ulcer, and is usually in the anterior or posterior commissure, most frequently the latter.

Thickening of the skin folds is characteristic of pruritus ani when accompanied by itching. It may extend over a wide area, in some instances involving the entire scrotum or vulva.

If no lesion is found on inspection, induration about the buttocks should be sought. Then with the anus well lubricated with a water-soluble jelly, the finger is inserted into the rectum. The tone of the sphincter should be noted, whether lax or spastic, and the size of the anal canal. A lax sphincter may cause incontinence and is very likely to be a sequel of tertiary syphilis. A spas-

tic sphincter may be the cause in all degrees of constipation. Constriction often follows operation or trauma. The induration of an old fissure can be felt frequently. A lump may prove to be a papilla, stricture, thrombosed hemorrhoid, polyp, bolus of feces, rectal abscess or carcinoma of the rectum. The presence or absence of pain, and of blood on withdrawal of the examining finger should also be considered. All rectal tumors can be felt.

Just as the history is very unreliable in proctologic diagnosis, so too roentgenologic examination is of little value unless a gross lesion is present. Digital examination is worth very little. As a result many patients are condemned to invalidism or to die from operable lesions, in spite of the fact that one of the most exact means of diagnosis known today is at hand. I refer to direct visualization through the proctoscope and sigmoidoscope. Between 8 and 10 inches (20.32 and 25.4 cm.) of the bowel can be visualized clearly in every case. In some cases 3 to 4 inches (7.6 to 10.16 cm.) more can be seen clearly.

If the examiner is not to be led into error, he must be as familiar with the appearance of normal mucosa of the bowel as he is with normal oral mucosa; the two are much alike. The mucosa is usually pale pink with numerous visible blood vessels. The wall of the anal canal and of the rectum is smooth, whereas, that of the sigmoid is likely to be in folds. The valves of Houston must not be mistaken for stricture and vice versa. As a matter of fact the uninitiated observer is likely to take the stricture for a hypertrophied valve. Small traces of blood, particularly on the anterior wall, are most likely to occur as a result of trauma, although the normal mucosa does not bleed easily on trauma.

The following lesions may be encountered: papilla, internal hemorrhoids, fissure, ulceration, stricture, polyps, diverticula, tumors, evidence of previous treatment or operations.

The papillae of Morgagni which are covered with skin are a part of the pectinate line. They may be the source of origin or become secondarily involved by an epithelioma originating elsewhere in the anal canal, but are mainly significant in that they present evidence of infection, when hypertrophied, and when long enough may prolapse through the anal canal, irritating

the sphincter and causing a spastic anus with constipation.

Hemorrhoids will always bulge into the lumen of the scope, and may or may not bleed depending on the presence or absence of infection. Unless thrombosed they are soft and cannot be felt with the examining finger. It is difficult to gauge accurately the size and number of the hemorrhoids. Hemorrhoids graded 2 or 3 at examination may prove under anesthesia to be a prolapse of the lower part of the wall and tax the ingenuity of the surgeon.

The mucosa may be glazed and granular, and bleed with slight trauma. The valves may be obliterated, the bowel lumen greatly reduced in size, and may appear as a long straight tube. Rubbing with a pledget of cotton on an applicator will cause bleeding from many pinpoint ulcers. There is probably no more delicate test for irritation of the bowel than this. The normal mucosa of the bowel does not bleed easily. The bowel containing a pathologic lesion will usually bleed on the slightest touch.

When such a condition is seen and the patient gives a history of frequent, bloody stools daily, and the roentgenologic examination discloses narrowing of the lumen and a straightening out of the folds of the bowel in a debilitated patient, the chances are that the condition is chronic ulcerative colitis. In early cases, however, the view through the proctoscope may be the only evidence suggestive of the presence of this serious condition. The patient may give a history of constipation only, although blood in some quantity is always present in the stool, together with mucus and pus.

An entirely different picture is that of the ulcer of amebic dysentery, in which a small elevation is coned out at the center, with apparently normal mucosa between the ulcers. The edge of a valve frequently is the site of the lesion. Irregular, large and small ulcers with overhanging edges and the floor covered with a dirty gray membrane may be visualized. With such a finding on proctoscopic examination, there should be a history of diarrhea, pus and blood, and usually of pulmonary tuberculosis. Also there is the irregular ulcer with edge bound down and wrinkled, as if an attempt at healing were taking place. The floor will be clean. In cases which give such a picture, there is usually a short history of infection, operation

and so forth. These ulcers are traumatic or secondary.

Ulcers from radium are associated with a history and are covered with a grayish exudate. They are found most frequently in women who have had applications of radium to carcinoma of the cervix uteri.

Polyps may be multiple or single, sessile or pedunculated, and usually are covered with mucous membrane. They do not bleed easily on trauma unless they have commenced to break down, in which case they may show malignant change. Single polyps are usually discovered on sigmoidoscopic examination following the patient's discovery that he has blood in his stool. Roentgenologic diagnosis of a lesion of this sort, is unreliable. Many times the polyps are only a few centimeters in diameter, soft, and easily pushed aside with no noticeable change of the column of barium. Multiple polyps are often an evidence of infection, and a frequent complication of chronic ulcerative colitis. A large polyp or multiple polyps may cause constipation or constipation alternating with diarrhea. It is generally thought that pedunculated polyps are more likely to be benign but some of them prove to be malignant—usually of a low grade.

Diverticula are very difficult to visualize but should be looked for, particularly in elderly patients with a history of constipation of long standing. When seen, they appear as smooth depressions in the mucosa and may be inflated through the proctoscope, care being taken not to rupture them. In the presence of diverticula, a pelvic mass, particularly in the male, should be given a guarded prognosis. It may prove to be the result of a ruptured diverticulum, instead of carcinoma, and the patient live for many years on removal of the mass.

Carcinoma of the lower part of the bowel has a firm, rounded edge, fixed at the base. It looks like a cauliflower head and bleeds easily on trauma. A malignant tumor can scarcely be mistaken.

Treatment. No conditions yield more gratifying results on treatment than most diseases of the lower part of the colon. Of the benign lesions, multiple diverticula or polyposis probably have the poorest prognosis. Carcinoma and chronic ulcerative colitis are giving way before the advance of science and education.

Hypertrophied papillae should be excised. Un-

complicated internal hemorrhoids either may be treated by electrolysis, excised or injected. Treatment of ulcers should be directed toward eradication of the underlying cause. A stricture may be cut through with the actual cautery. A single polyp should be cauterized unless it is proved to be highly malignant. In the treatment of multiple polyposis there are two choices; if the polyps are confined to the lower 16 cm. of the bowel, they may be treated with repeated cauterization. If extensive, total colectomy may be performed. Diverticulosis, occurring as it does in the aged patient, is difficult to treat.

In acute ischiorectal abscess hot packs should be instituted and the abscess should be drained. The patient should be informed that a fistula-in-ano will probably develop and later an operation will be necessary.

An abrasion usually will respond to an anti-constipation regime and hygiene: the parts being washed with a mild antiseptic solution after each defecation.

Pruritis ani is still a mystery as to its etiology. Almost every known remedy is recommended. Roentgenotherapy gives poor results. Operations have been devised on the assumption that there is an irritation of the nerve endings. Here the involved areas are simply lifted and separated from the underlying structures with a sharp scalpel or a chemical. Many solutions for injection have been tried, but operations of this sort must be confined to the region immediately surrounding the anus and are therefore of limited usefulness.

Fistula. A simple fistula often causes much unhappiness to both physician and patient. There is probably no condition about which the average surgeon knows less. Anyone with a minimum of surgical judgment and skill may successfully remove a gall-bladder or appendix and even do a successful gastroenterostomy, but surgical procedures on the anus require exacting knowledge if results are to be uniformly successful. The original infection in a fistula is usually in one of the crypts of Morgagni and naturally the internal opening will be found at that point. Discovery of this opening is the key to the entire problem. The internal opening will close at times just as will the external opening, and in that case diligent search will be required for its discovery. However, if it is kept in mind that 99% of the internal openings are

in one of the crypts, usually between the internal and the external sphincters, it can be found. It is an injustice to the patient to go ahead with the operation until this is found, because the fistula will return if the tract is not completely opened.

I do not find it necessary to use methylene blue or any of the other dyes in following the tract. Scar tissue is always present and is more distinctive than any dye which diffuses rapidly and obscures the field of operation. The tract is opened widely and all overhanging edges cut away, and packed with iodiform gauze. It is dressed daily and care taken to insure healing from the bottom. The rapidity of closure is remarkable, and if watched carefully any small sinus overlooked at operation will show up and can be taken care of while the patient is still under treatment. One point I would like to stress and that is the infrequency of any demonstrable tuberculosis in fistula of the anus, either grossly, microscopically or chemically. Nearly all patients I see have had from one to six operations, and in most instances have been told that failure of the operation was attributable to the presence of tuberculosis or possibly malignancy, whereas the truth of the matter is that the internal opening was not discovered. I do not say that tuberculous fistulas in the anus do not occur, but that they are very unusual and are rarely seen outside of institutions for the treatment of pulmonary tuberculosis.

CONCLUSIONS

1. Ordinary methods are very unreliable in the diagnosis of diseases of the lower colon, anus and rectum.

2. Direct visualization through the proctoscope offers the most exact method of diagnosis at our disposal today and should be made available to every patient giving a history of change of bowel habit.

3. Tuberculous fistulas of the anus are very rare and an unsuccessful operation for a fistula is in the majority of cases attributable to failure to discover the internal opening at the time of operation.

1. There is no claim for originality in this paper, but merely a brief summary of conditions actually observed and some of the high points of diagnosis and treatment as stressed by my very good friends and former teachers. Doctors L. A. Buie and N. D. Smith of Rochester, Minnesota.

Myers Building.

CONSERVATIVE TREATMENT OF PERIPHERAL ARTERIAL DISEASE

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Successful therapeutic measures for peripheral arterial disease must secure and maintain adequate improvement in collateral circulation to compensate for the occlusive progress of the disease. We cannot cure the underlying condition but we can help or ameliorate the results of the disease. More than 90% of these cases are due to diabetic or senile arteriosclerosis or to thromboangiitis obliterans.¹ The obstructive arterial disease itself is little effected by whatever treatment is used.

A continual contest is taking place between the formation of new and larger collateral channels and the occlusive process in the obstructed or narrowed vessels. Depending upon which one predominates symptoms will be present or absent. In the early stages unless a thrombus suddenly develops in the diseased vessels the collateral arteries are sufficient to maintain normal circulation. This accounts for the frequent delay in the appearance of symptoms until the disease is far advanced. Consequently many patients are not seen until the collateral channels are involved by the disease; and to those with serious complications already present intensive conservative treatment cannot be given.

During the past year at the Presbyterian Hospital of Chicago 10 of 12 patients requiring major amputations for arterial disease were suffering with infected gangrene at the time of admission. Eliason² at the Philadelphia General Hospital found that 50% of 175 patients who had major amputations for diabetic gangrene did not know they had diabetes until admitted to the hospital with gangrene. Undoubtedly progress in the unsuspected arteriosclerotic disease was present for years and earlier discovery of the diabetes would have anticipated peripheral arterial disease. Moreover many minor every day procedures such as cutting the nails, removal of ingrown toe nails, corns or callouses, incisions for various causes, burns and frostbite precede the development of seri-

ous gangrene in previously unrecognized peripheral arterial disease. Barker³ at the Mayo Clinic reported that these measures were followed by gangrene in 35% of 131 cases of thromboangiitis obliterans and in 39% of 115 cases of arteriosclerotic disease. Any large diabetic or peripheral arterial disease service will show an equally appalling number of serious complications following such simple minor operations. I wish to particularly emphasize caution in local surgical and medical therapeutic measures of the extremities until the adequacy of the circulation is established.

In the management of peripheral arterial disease due consideration must be given to the stage and type of arterial occlusion present. Where the collateral channels are involved already in the occlusive disease process therapeutic measures cannot be expected to greatly improve the circulation. However before this stage is reached circulation can be increased by procedures of recognized value. In other words detailed examination should predetermine the extent of arterial involvement—the stage of the disease, and the type of the arterial occlusion—the relative amount of mechanical and spastic obstruction present.

In selecting cases for conservative treatment appropriate diagnostic tests will foretell what results can be expected. An index of the degree of circulatory deficiency is determined under controlled conditions by skin temperature findings of the digits and various parts of the extremities. However this will give no indication as to whether the poor circulation is the result of arterial spasm, mechanical obstruction, or a combination of both. After temporary novocain block⁴ of the posterior tibial nerve at the ankle or the ulnar nerve at the elbow repeated temperature readings will reveal the amount of arterial spasm present. For example where the original skin temperature reading showed a deficiency of 6° C with a 3° rise after nerve block 50% of the circulatory disturbance would be due to spasm and 50% to mechanical obstruction. When no rise occurs mechanical occlusion only is present or when the readings rise to normal purely spastic disease is present. General anesthesia,⁵ spinal anesthesia,⁶ or foreign protein reaction⁷ may be used to obtain the same information.

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Mechanical obstruction without spasm occurs in most cases of senile or diabetic arteriosclerosis, in the late stage of thromboangiitis obliterans and in spontaneous thrombosis of the peripheral arteries (Chart 1). In the absence

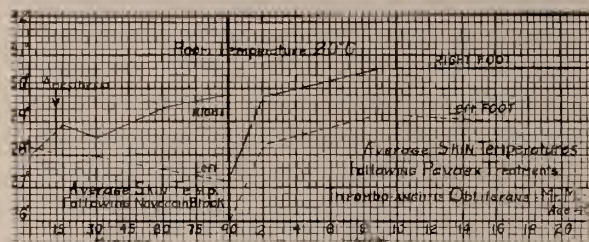


Chart 1. Comparison of temperature curve of nerve block and Pavaex treatments in case of Buerger's disease. Nerve block failed to improve circulation of left foot showing deficient circulation was due entirely to organic occlusion in the vessels. Right foot with lower initial temperatures showed improvement in circulation almost to normal level (30.5°C). On the right side deficiency in circulation due to arteriospasm.

of complications intensive treatment will delay the onset of serious circulatory failure. Postural exercises as devised by Buerger⁸ of New York and modified by Allen⁹ of Boston have been widely used. With the patient lying prone the limbs are elevated with support at an angle of 60° to 90° above the horizontal until ischemia or pallor is produced. Then they are lowered and allowed to hang down until one minute after the appearance of the reactionary rubor. Following this the limb rests in the horizontal position for 3 to 5 minutes. A full excursion usually requires about 10 minutes. This is repeated for 1 hour, once or twice daily. The time allowed for each position is determined periodically by the physician in order to supervise the proper cooperation of the patient. In dispensary work where some of the other forms of treatment are not available I find these treatments particularly valuable.

Contrast baths with the limbs immersed alternately for $\frac{1}{2}$ to 1 minute in warm water at 110° to 115°F . and then in cold water at 45° to 50°F . are also of value. This can be continued for as long as 30 minutes and repeated 2 or 3 times daily. In both of these forms of treatment progress is slow but persistent effort will be rewarded. Many patients, however, fail to realize the danger of the circulatory disease. With no noticeable improvement rapidly taking place they are easily discouraged and discontinue the treatments.

A recent and valuable addition to the therapeutic measures at our disposal is the Pavaex treatment.¹⁰ The limbs are exposed to alternating suction and pressure in order to stimulate greater circulation through collateral channels. Because by this method passive vascular exercise is produced the first two letters of each



Fig. 1. Pavaex treatment unit. As a rule both extremities are treated because of bilateral involvement in most peripheral arterial diseases.

word were coined by Reid and Herrmann into the word Pavaex-pa for passive, va for vascular, and ex for exercise (Fig. 1).

By placing the limb in a glass container the air is alternately sucked out and forced in. The amount of suction and pressure from 20 mm Hg. to 100 mm Hg. and the number of cycles of changes in pressure per minute are varied

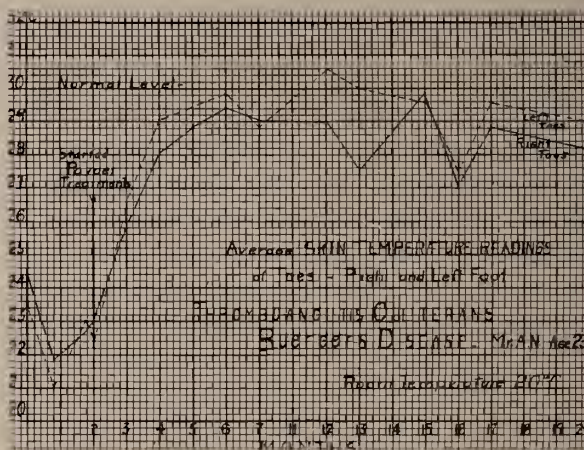


Chart 2. Skin temperature curve for patient Fig. 2. Initial temperature readings after stabilization at room temperature for 1 hour. While under conservative management without Pavaex treatments for two months skin temperatures continued to decline. Following Pavaex treatments rapid improvement in skin temperatures was secured and maintained for more than 18 months. Drop in temperature at the 13th month and 16th month coincided with the time the patient resumed heavy smoking.

according to the case treated. These changes are necessary according to the degree of circulatory disturbance present as well as the cause of the disease. The average length of treatment is 1 hour. In the past 16 months we have used this treatment on 161 patients, a total of more than 7000 hours. By means of frequently repeated skin temperature readings and complete records there is no question but that this procedure is of great value. (Chart 2.)

In the presence of infection or deep gangrene the patient cannot be given the benefits of these treatments because of the danger of spreading the infection and the slowness in augmenting collateral circulation. Carefully controlled blood and metabolism experiments before and after Pavaex treatments have shown that improvement in circulation is secured²² and maintained for considerable time. However the natural progress of most arterial diseases makes permanent improvement impossible. We have found that in order to get the best results Pavaex treatments require extensive facilities and experienced personnel to manage the treatments.

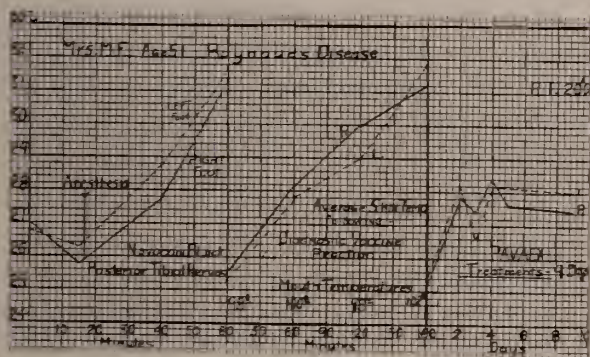


Chart 3. Raynaud's disease. All peripheral pulsations palpable. Nerve block produced normal response. Diagnostic vaccine reaction produced elevation in skin temperature to 31°C+ with mouth temperature of 102°F. Pavaex treatments did not reproduce the improvement which followed nerve block.

Neurocirculatory or spastic peripheral arterial disease may or may not have organic lesions. All paralytic extremities have some degree of poor peripheral circulation. These can receive temporary benefit by contrast baths and alternating suction and pressure treatments. In the Raynaud's type of disease the suction and pressure proved of least benefit. In three cases with very poor circulation nerve block produced a rapid return of normal circulation as determined by skin temperature readings. At no time could

this improvement in circulation be reproduced by treatment (Chart 3). Artificial fever, either by the new general diathermy method, or by foreign protein reaction, has been reported as giving some improvement. The previously de-

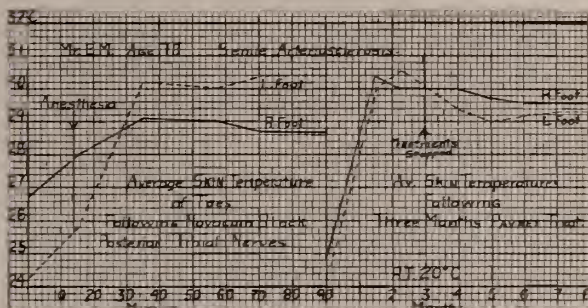


Chart 4. Arteriosclerotic disease. Novocain nerve block of right foot produced an increased temperature from 26.8°C to 29°C. With Pavaex treatments a greater increase was secured and maintained for more than 6 months after discontinuing treatments. Oscillometer index at right ankle was almost zero. X-ray revealed extensive arteriosclerosis of right side and none on left. On the left side nerve block showed a purely spastic condition with improvement in temperature findings to the normal level (30.5°C).

scribed contrast baths with hot and cold water are of some value to these patients.

Mixed mechanical occlusion and spasm (Chart 4) occur in varying amounts in many cases of senile or diabetic arteriosclerosis or in early thromboangiitis obliterans. These patients are offered the greatest opportunity to benefit by the means at our disposal to improve the circulation. In most of these cases we are able by contrast baths, postural exercises and suction and pressure to develop higher temperature readings than is obtained by relieving the spasm by nerve block. The great majority of patients suffering with peripheral arterial disease uncomplicated by gangrene or serious infection belong to this group. Our hope for success is therefore in treating these cases before extensive mechanical obstruction of the entire arterial tree has taken place.

In addition to improving the peripheral circulation of blood the care of the involved extremity is important. The usually dry and atrophic skin of the feet or hands should receive daily attention. The parts should be washed and then greased with lanolin, cocoa butter or olive oil as often as it is necessary to keep the skin soft and pliable. One is immediately impressed by the change in appearance of the skin when this is accomplished. Cutting the toe nails, corns

and callouses should be done only after thorough softening of the tissues and under strict surgical asepsis. These measures are better and safer when carried out by a physician or another member of the family. Chiropodists should be employed only when their knowledge and ability in carrying out asepsis is known. Carelessness or indifference on the part of the patient in the care of the toes is usually overcome by frequent periodic examinations.

Trauma from tightly fitting shoes should be guarded against. The fitting of shoes is particularly important when changes are made from light weight to heavy stockings. Naturally pressure on the toes or sides of the foot will cause a further reduction in the already deficient circulation.

Keeping the extremities constantly warm may be a difficult problem. Relatively few patients are in a position to do what they have been instructed would be best nor are they cooperative to the fullest extent. In cold weather at least one pair of wool stockings or at times two pairs may be required with a corresponding change in the size of the shoes worn. Wool lined shoes are an added protection and even wool lined leggings as suggested by Reid¹¹ of Cincinnati have proven of value. With a poor circulation already present the danger of further decreasing it by exposure to cold may prove disastrous. I recall patients treated for years for apparent frostbite and gangrene of one extremity who volunteered the information that the weather was not very cold when the injury occurred. Thorough peripheral circulatory examination then demonstrated that there was a preexisting bilateral circulatory disease. Three of these cases were due to Buerger's disease. Under conservative treatment the gangrenous areas healed and all the symptoms of the disease have been greatly relieved. By keeping the extremity constantly warm, arterial spasm is reduced and perspiration increased with the resulting softening of the skin. While in bed an electric cradle is beneficial in keeping the feet warm. Starting with a temperature of 110° or 120° F. there can be gradual increase to 150° F. Electric pads or hot water bags are used cautiously because of the frequency of burns. For this reason one should advise against their use.

Fluid intake should be in sufficiently large

quantity to assure a body reserve. Many investigations especially in thromboangiitis obliterations have indicated that improved circulation of blood follows administration of large quantities of fluids. A thinning-out process of the blood is supposed to occur with easier flow through the arteries and capillaries. By means of complete blood counts and other tests I have been unable to ascertain that this actually takes place. I can see no advantage but many disadvantages to intravenous, subcutaneous or transduodenal administration if sufficient liquid can be taken by mouth. However the patients do seem to improve and greater sweating can be stimulated by abundant fluid intake. The sweating effect on the limbs particularly seen during many treatments with positive and negative pressure is worth the effort. One should require at least 3000 to 4000 cc fluid intake per day.

Relief from pain is frequently a most difficult problem. Pain may be severe when there is only a mild degree of poor circulation. On the other hand no pain may accompany cases of severe circulatory deficiency. The presence of complications is largely responsible. Diabetics and those with Buerger's disease commonly have a neuritis. Infection and especially gangrene likewise are accompanied by severe pain. Improvement in circulation either by postural exercises, contrast baths or Pavaex treatments will usually bring some relief. Fissures, infarcts, or gross gangrene are associated with such severe pain that little if any relief is obtained by ordinary measures. Morphine or its derivatives are objectionable and frequently are ineffective even when used. Interruption of the superficial sensory nerves is the last resort. Lasky and Silbert¹² of New York and Smithwick and White¹³ of Boston recommend either alcohol injection or crushing of the peripheral sensory nerves for the relief of pain instead of amputation.

Muscle extracts,¹⁴ pancreatic tissue extracts¹⁵ or cyst fluid, cholin preparations,¹⁶ theobromine¹⁷ and sodium thiosulphate have been used empirically for relief of intermittent claudication. Although clinical symptomatic improvement seems to occur I have been unable to demonstrate any definite change in skin temperature readings.

Tobacco smoking is injurious and should be

discontinued. Reduction in peripheral circulation follows its use in normal individuals as well as in patients with arterial disease. Mad-dock and Collier¹⁸ of the University of Michigan reported $\frac{1}{2}^{\circ}$ to 6° C drop in peripheral skin temperatures following the use of tobacco. Minute quantities of nicotine given intravenously likewise caused a fall in temperature. The quantity of nicotine used was considered equivalent to the smoking of two cigarettes. Sampson of Boston,¹⁹ and Wright²⁰ of New York have reported similar results from their investigations on the vasospastic effect of tobacco. In the presence of peripheral arterial disease a further reduction by tobacco smoking of the already poor circulation may prove serious. Silbert²¹ of New York stresses the importance of tobacco as the cause of recurrences in clinically cured cases of Buerger's disease. He noted that in every instance of relapse with ulcer formation smoking had been resumed. Similarly I have seen three minor recurrences of the disease after the patients had resumed heavy smoking. In spite of the fact that these patients have had terrible suffering and they know the seriousness of the disease they frequently ignore all caution and begin smoking again. However we have no other evidence that tobacco is an etiological factor in Buerger's disease.

CONCLUSIONS

The symptoms of peripheral arterial disease are evidence of a deficient or inadequate circulation of blood in the extremities. The natural effort of the circulatory system in forming new or larger collateral channels is insufficient to compensate for the progress in the occlusive arterial disease and poor circulation results. Since we cannot cure the underlying disease process we must treat the results of the disease.

Physical therapeutic measures are of value in hastening and augmenting collateral circulatory channels. To be considered successful sufficient improvement in circulation must occur to overcome the rapidity of occlusion in the diseased vessels. If the treatment is too slow in accomplishing its object then gangrene can be expected. Or before this end stage, the presence of infection with resulting tissue damage or thrombosis will be followed by rapidly advancing gangrene.

Because of the danger of further reduction in the already deficient circulation in peripheral arterial disease the wearing of poorly fitting or tight shoes, exposure of the extremities to cold, or the vasospastic action of tobacco should be avoided.

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UROLOGIC LESIONS MASKED AS ESSENTIAL HYPERTENSION

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For purposes of discussion essential hypertension may be regarded as hypertension of unknown etiology regardless of the characteristic or amount of hypertension or the age of the individual.

Such a broad base for consideration of essential hypertension is necessitated primarily because the patients to be discussed were all treated previously for such a condition, and secondarily, because medical men have not been able to come to terms and establish a classification so that in a particular instance one can say definitely that it is or is not essential hypertension.

My interest in cases who had been under treatment, for variable periods of time, for essential hypertension; and in whom a urologic lesion was discovered inadvertently to be the causative factor was aroused by the following case.

L. M. R., aged 37 years, married, 1 child, entered the hospital Sept. 2, 1932. Pain began in the right renal area ten weeks before, rather sharp. Later pain in the lower abdomen, especially the right lower quadrant and in the glans penis. On one occasion pain in the left loin. The present attack started about three hours before and has been relieved by sodium amytol.

There is a suggestion of radiation of the pain along the course of the ureter. The first time there has been any indication of radiation but at all times definite areas of pain in the right loin and right lower quadrant. The pain is moderate in character, more like that seen in

hydronephrosis or passage of a blood clot than in typical renal colic from calculous disease.

He has been treated for the past five years for essential hypertension, first seeking treatment for persistent



Fig. 1. Tracing outlining dilated pelvis and upper half of ureter.

headache at which time the hypertension was found; at first 170 M.M. He has been examined at two well known clinics as well as by several private practitioners, but none has been able to determine the cause of the hypertension. He has observed for himself that rest in bed or a vacation, lying on sunny sands of Florida, gives him relief.

Pyelography revealed the hydronephrosis shown in the skiagram. (Fig. 1.)

Since I have known him his blood pressure has varied from 240/192 to 170 systolic.

During the past three and a half years he has received temporary relief from ureteral dilatation with a corresponding reduction in the blood pressure level. His pressure can be pretty generally maintained around 170 to 180 by dilatation; but gradually works up to well over 200 if the intervals between dilatations are too much extended.

The preceding experience interested me sufficiently that I reviewed several cases and paid particular attention to subsequent ones who might fall into the same category.

Case 2 is that of a woman of 25 years who was referred to a surgeon for operation for acute appendicitis. He was distinctly on the alert and thought that a urologic consultation might be helpful. When I saw the patient she was in the throes of Dietl's crises of complete blockage of the ureter. Changes of position in bed to promote drainage effected relief and later the accompanying pyelogram was made. (Fig. 2.)

She gave a history of treatment of several years' duration for high blood pressure of unknown etiology ranging up to 170. This has receded to not over 140 since her urologic condition was taken care of.

Case 3 is quite similar except that she was older and had been treated for essential hypertension for many years, the pressure varying from 160 to 180. She was



Fig. 2. A Dietl's Crisis the night preceding pyelogram.

65 years of age and suddenly developed symptoms of right ureteral obstruction of two days' duration. She was treated by nephropexy and subsequent ureteral dilatation. The blood pressure since hovers around 150. (Fig. 3.)



Fig. 3. Large hydronephrosis of right kidney.

Case 4 was rather dramatic. He had been treated for high blood pressure for 12 years, now aged 52; the past two and a half weeks acutely ill with an infected hydronephrosis and a blood pressure of 268. The kidney was removed and before leaving the hospital his blood pressure had receded to 156.

I will give the high lights of a few more cases very hastily.

Case 5. Single, female, aged 35. Under the care of a physician for essential hypertension when she suddenly began an active hematuria with notable bladder symptoms. A diagnosis of acute hemorrhagic nephritis was made but no material benefit derived from several months treatment when she came under my observation.

Pyelogram shows a so-called "loop the loop" kink of the ureter. (Fig. 4.)

Her blood pressure for 4 years has remained below 140.



Fig. 4. Obstruction of ureter with hydronephrosis.

Case 6. A male, aged 50, whose underlying pathological factor was demonstrated after the onset of urinary symptoms since when his pressure has been reduced from 160 to 140 by systematic ureteral dilatation. Parenthetically, it may be added that a small middle lobe was removed by transurethral prostatic resection.

This discussion is given with a distinctly constructive thought in mind. And, in no particular, is to be construed as a criticism or censure of the medical counsel these patients had before a definite diagnosis of their underlying causative pathology was discovered. It must be remembered that, while they had been under treatment for varying periods of time for the hypertension, a detailed urologic study was not made until the symptoms definitely indicated it should be made. This brings up several thoughts for discussion.

Is routine pyelography indicated in cases of essential hypertension? I should answer yes with the proviso that not only a careful, intelligent physical examination has been carried out but also a diligent and detailed history obtained. I might even extend it to include certain cases of migraine.

I don't believe any serious objection can be raised, certainly, in those cases of elevated pressure with annoying symptoms and sequelae or in those in whom the pressure is in itself a hazard to one's well-being. Our helplessness to adequately deal with hypertension adds force to this premise. Such helplessness likewise lessens the obvious objections of expense and annoyance, of pyelography.

The question naturally arises as to whether an intravenous or retrograde pyelogram should be elected. There are advantages and disadvantages to both. Not infrequently one learns nothing or too little from the intravenous. On the other hand, there are occasions when the retrograde is unsatisfactory and associated with discomfort. This last objection, here or elsewhere in medicine, depends considerably upon the patience, gentleness and solicitude of the operator. One who is hurried, too busy, or has little concern for another's comfort will cause more pain and shock and probably get less satisfactory results.

There are two other disadvantages to the retrograde which are unusual and should be rarely encountered in the class of cases under discussion. One is the complete obstruction of the ureters to the passage of catheters and the other is the intense inflammation of the bladder so that the ureteral orifices cannot be seen.

On the whole it may be said that the retrograde produce better skiagrams but with some discomfort, while the intravenous give a little less satisfactory radiographs but practically free of discomfort.

The particular procedure should be suited to the individual patient.

There are other urinary conditions which occasionally cause high blood pressure but which are generally recognized with little difficulty because of the accompanying urinary symptoms. Among them may be mentioned, calculus, prostatitis, stricture, diverticulum and malpositions of the bladder, as pressure from without or adhesions.

The statement has already been made that no censure should be directed at the physicians who had seen these patients previously as the urinary symptoms were sudden and immediately directed attention to the urinary tract. However, I would like to urge that we investigate more fully the bladder complaints in women. Too frequently when they complain of pain, burning, frequency, urgency and even incontinence they are dismissed with a bladder lavage or two and a urinary antiseptic or sedative. More interest and diligence will be enlightening.

I would like to suggest the obsolescence of the terms "strain" and "acid urine." The normal urine is acid but does not cause irritation. The

normal individual does not develop a strain or discharge or urethral burning after either dalliance or alcoholic license. So that, in such instances the causative factor should be sought for and corrected. Generally a prostatitis or stricture is the offending lesion.

Conclusion: This discussion is offered in the belief that other cases of pyelectasis or other urinary tract disease may be masked as essential hypertension and may continue to be unrecognized except in those few individuals who develop infection or other acute urinary symptoms thus directing attention to the urinary tract.

I would further make a plea that pain and frequency of urination in the female be not dismissed so readily.

That backache, pain in the legs, lassitude, listlessness and fatigue in the male be subjected to a close scrutiny for prostatitis, vesiculitis and strictures.

That diagnoses of "acid urine" and "strain" be relegated to the prescientific era of medicine.
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AGE IN RELATION TO PREGNANCY

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As every one knows, age is a period which marks life by relative phenomena, thereby fixing certain facts in relation to other matters affecting it.

Age in the human, marks the beginnings and endings of functions peculiar to the race. It marks limits on some, so general as to create a definite formula. For instance, in women we have puberty, the beginning of childbearing possibilities, a period of thirty to forty years duration; then the menopause occurs and childbearing ceases. Climate, nutrition and social environment affect some earlier and prolongs the activity longer in some than in others.

I have delivered a girl of ten years at full term, before she had ever menstruated; also a young married woman at fifteen who had three successive children before she had menstruated. I have also delivered a woman who menstruated once each year and one who menstruated twice each year, otherwise normal.

I have delivered a woman nearly sixty years, an Assyrian, mother of thirty children, bearing

children contemporaneously with her daughters, who nursed her children at their breasts as their own. So we see that wide variation occurs.

Women may become pregnant although vitally ill with cancer, tuberculosis, venereal diseases or insane. Pregnancy occurs when undesirable as easily as when desirable. An unruptured hymen may not prevent. Incomplete pelvic and abdominal operations do not deter. The woman may be drunk or unconscious. In fact, pregnancy may occur under most unexpected conditions, in which even age is not a sure defense but modern life tends to establish a definite plan, by which we can fairly estimate and control the incidence.

This article treats of age and its relation to the probability of such incidence as met in the practice of the gynecologist.

In the present day practice of gynecology, many factors enter into the successful conduct of a case, such as the considerations of the social and economic, which are as important as the physical. There is no longer the simple family background of the individual, but problems present themselves, which if neglected may upset the whole social fabric concerned as well as our own professional standing.

Growing old in experience and years of practice, we drift away from the details of family practice, including active obstetrics, but we drift into what is even more important to our women and society (in the broad sense) in which she belongs, to the relation of confidant, consultant and gynecologist of the highest type.

After a practice of four decades in the same class of patients, clinic and private, our work takes on personal interest in the individual case, and each case presents a panorama, and even the new cases fall into lines quite as interesting because of the similarity of certain salient features common to them all. After many years active practice, I find the most interesting patients are the women between thirty-five and fifty-five years of age.

They probably have been brought through the experiences of the majority of their time, having survived adolescence, marriage, childbirth, widowhood and have begun to "feel their age." They may have experienced surgical repair or over-repair, the fear of pregnancy, venereal disease

and cancer, so unreasonably emphasized by medical foundations and public exploiters, who have paved a way for the anxieties of the middle age woman, making her a psychological as well as a physiological problem.

At an increasingly early age, about thirty-five, she has already become obsessed with the idea of early "change of life," even although she also hopes for an early escape from pregnancy.

Besides the diseases so feared, and the vague tumors supposed to be lurking in obscurity to show up at this time, no other condition is so terrifying as the fear of pregnancy, especially since the present social unrest. Rebellion against social restraint has not only affected our young women but has reached the woman of all ages and conditions. Her emotional life, her associations in business and sport being more free than ever, together with her insistence on "leading her own life" has resulted in her experimenting, with as little preparation for results as have the younger women.

We have long ago ceased to ask our patient whether married or single, but fill that in at the close of the day. I used to keep on hand a collection of wedding rings to give the unmarried mothers before going into the hospital, but that is no longer needed and the married ones do not always wear one. The recent interest in the methods of birth control has opened the way for us to compile records never before possible outside of hospitals. Now, with coöperation we can start out with data fairly reliable and even include dates of exposure to pregnancy as part of our history.

The survey of our data thus obtained is most enlightening and we are learning how many and varied are the factors leading to the determination of effect on the menstrual phenomena. We become a sort of detective as well. How much greater is our advantage now over that of other days and other ways!

Our first duty is to replace fear with certainty: time enough then to suggest the cure. An Aschheim or Zondek or similar test in the absence or addition to the usual signs of pregnancy are indicated when in doubt, since all the usual signs can be found in other conditions, i.e., increased size of the uterus by tumors, misplacements or temporary congestions. Fluid in the breast may frequently be found where no

pregnancy has ever existed and as long after childbirth as four years.

Fear, guilty conscience, shock and other factors may be tested out by endocrinology. To-day nearly every previous error can be met by care and the application of modern methods, and at the same time we have added enormously to our knowledge of differential diagnosis, so that the ages between thirty-five and fifty-five, while remaining the most dangerous ages of a woman's life becomes the *safest* age for woman, in the hands of a conscientious gynecologist.

Breasts may become unduly enlarged owing to the changes going on in the ovaries, especially cystic conditions. Involution of the uterus, ovaries and breasts may be affected secondarily to other processes, yet be the predominating feature of the case, as we now recognize.

Not only is an error of diagnosis unforgivable now but unforgettable by our fellow physicians who are our most severe critics. Only recently I heard an old story of twenty years cited against one of our prominent physicians by another, although it occurred during the time when many a surgeon was shocked by revealing a living fetus when operating for a benign tumor. Now, although less liable to do this, with our x-ray and other means of differentiation, it would be less dangerous since we have found operations for septic appendicitis, obstructing tumors and the delivery of the child, itself not essentially contra-indicated.

We now find that even after many years since the cessation of childbearing, there seems to be a tendency to renewed activity in the ovaries, just at the time that involution seems to be progressing to a normal menopause, and I know of no other time of life for the women so important, but I should like to see it directed rationally and as just another normal phenomenon rather than approached in fear, shame, and ignorance, overshadowed by the public emphasis of malignant, mental and physical disaster.

Sometimes when pregnancy is desirable, in the light of our new experimental methods of engendering what we want, we are astounded by the miracle of fulfillment, at unusual ages. By the use of specific endocrines and the corrective tendency of nature to balance her forces, we succeed in bringing about the desired results. The rational application of the theory

would be to use the specific endocrine found present in cases where pregnancy is the natural consequence, but sometimes, where pregnancy has resulted as secondary to other endocrine correction, I have wondered, if, after all, the stimulation of the system as a whole by which-ever specific of the group of glands, was not sufficient for the restoration to normal.

Of course, this refers to cases where there is no mechanical or pathological interference to pregnancy. Nature is known to surmount tremendous obstacles to pregnancy, and age is not found to be unalterably a preventive. Age in women is relative, not absolute. Even so early this year there is reported a birth of a nine pound and two ounce child to a woman who weighed 745 pounds and whose husband weighed 304. Also, that of a girl of fifteen years who gave birth to triplets, having already been the mother of a ten months old child. Yesterday recorded the birth of a child to a ten year old girl.

The conscientious gynecologist can still be greater than the times, by making his diagnosis certain without unusual equipment, using the laboratory and technical methods for his checkup, because experience and professional instinct can be relied upon fairly well.

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CONCERNING GENITAL TUBERCULOSIS

With Personal Observations

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and

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In presenting a treatise on genital tuberculosis the idea paramount in the minds of the authors is not to offer new views but to present a summary of present views, to provoke an additional instructive discussion and to venture some personal reactions.

Although the literature is voluminous on genital tuberculosis this subject remains of great interest because of the various opinions on the mode of infection and the progress of the disease.

Whether or not the lesion begins in the epididymis and extends to the vesicle and prostate or whether the initial lesion is in the vesicle

and prostate is still in controversy. Barney, George Walker and others taking the first position; K. M. Walker, Young, in conjunction with others for the latter. Tuberculosis of the epididymis is readily seen and felt while tuberculosis of the vesicle or prostate may be overlooked even by the most experienced observers.

We feel that tuberculosis of the genital tract is primarily hematogenous or is secondary to tuberculosis of the urinary tract. The disease tends to spread and multiple lesions are the rule and it is quite obvious with multiple lesions the point of onset cannot be determined satisfactorily.

The prostate is probably more frequently infected than has been thought, Krzwicki found that in fifteen cases of urogenital tuberculosis the prostate was tuberculous in fourteen. Barney and Cabot found this to be true in 75 out of 101 cases. Primary infection of the prostate is rare and most authors including ourselves contend it really never occurs.

Quinby has done extensive histological studies on several cases. He believes that tuberculosis of the prostate or vesicles calls forth a tissue reaction of the chronic inflammatory type in which caseation and liquifaction necrosis are but slightly present. In the epididymis the process is much more commonly a destructive one leading to early necrosis. He feels that when tuberculosis is found in the epididymis, prostate and vesicle the tuberculosis of the vesicle and prostate is an older process than that in the epididymis. The histological evidence in Quinby's cases seems to support this hypothesis.

It is generally agreed that tuberculosis of the genital tract is secondary to a focus at some other point in the body, the one most frequently considered is a tuberculous infection of the lung which spreads directly through the blood stream to the epididymis, vesicle and prostate or metastasies to the urinary tract with a secondary involvement of the vesicles, prostate or epididymis.

In the prostate, formation of tubercles begins in the posterior lobe as a rule near the ejaculatory duct from which it has origin; the corresponding vesicle is almost always involved. It is not possible to determine whether the prostate is infected as the tubercle bacilli ascend or descend the ejaculatory ducts or is it purely hematogenous? Invasion by way of the blood stream is possible and probably occurs in this

manner when urinary tuberculosis cannot be demonstrated.

In all probability all modes of infection take place. The epididymis because of its peculiar blood vessel distribution offers exceptional facilities for the lodgement and distribution of the tubercle bacilli. In view of the fact that the gonococcus travels from the urethra to the epididymis against the seminal current it would seem that tuberculosis might travel in the same manner.

Autopsy reports vary in the percentage of cases of genital tuberculosis found. Schultz reported 125 cases in 14,086 autopsies and in these 125 cases there was always some other focus of tuberculosis present in the body, practically all in the lungs. The vesicle was involved in 64.4%, the epididymis in 52.8% and the prostate in 83.2%. He reports that of this number 28% had tuberculous prostatitis, no other genital organ being affected and in 18.4% the prostate was the only organ infected in the whole genital system.

The gonococcus is sometimes placed as the main predisposing factor in the production of genital tuberculosis. It is true that the local resistance is lowered after a Neisserian infection and in all probability if these parts are exposed to tuberculosis by the presence of the bacilli in the urinary stream an infection is more likely to occur. Trauma is probably another important etiological factor. Heredity to a predisposition is just as important as in bone and pulmonary tuberculosis.

Diagnosis and differential diagnosis. The diagnosis of genital tuberculosis, as in other areas of tuberculous involvement is in the early stages often presumptive. Intelligent complete history is imperative since symptomatology at the onset is generally quite obscure and necessitates a thorough and complete examination of the entire tract.

A history of a previous pulmonary tuberculosis is extremely important and often clarifies many unusual unaccountable symptoms of supposed urological origin; loss of weight and general malaise associated by some urinary complaint should be considered seriously. X-ray examination of the chest and guinea-pig inoculations of patient's urine is a regular routine in supposed urogenital tuberculosis.

In the collection of urine for bacteriological

studies, a few important procedures might be emphasized. Ureteral catheterization or a catheterized specimen is not necessary. The glands must be thoroughly cleansed, otherwise a smegma bacillus contamination is possible, the urethra is irrigated with sterile water and the patient's terminal urine is collected for smears and culture analysis. Cases of pyuria free of bacteria are always considered potentially tuberculous; however, the absence of cocci or bacilli does not preclude the possibility of genital tuberculosis. In diagnosing epididymal tuberculosis, tumors of the scrotal contents must if possible be excluded. Sarcoma, carcinoma, embryoma and teratoma are not uncommonly difficult to differentiate and the associated inflammatory hydrocele further complicates the picture. The appearance of the anterior hypophyseal sex hormone, prolan A in the urine of men suffering with testicular tumors, as pointed out by Zondek in 1929, has been of great assistance to us in differential diagnosis. Bilateral tuberculosis of the epididymis with discharging scrotal sinuses is commonly seen by us and other observers, whereas bilateral testicular tumors are extremely rare, not more than forty-six cases being reported in the literature at the present time. We have found it rarely necessary to tap the associated hydroceles, since the globus major is not included in the tunica albuginea which simplifies palpation and interpretation of findings.

In considering further the differential diagnosis of epididymal tuberculosis one must not overlook the importance of rectal examination. In primary tumors of the scrotal contents the prostate and seminal vesicles are rarely involved whereas in the condition under consideration these structures are practically always nodular or other tuberculous changes are noted. In chronic induration of the epididymis so commonly observed following gonorrheal infections in which we find a gradually decreasing, painless, nodular, globus minor, one must ever have in mind the possibility of a chronic fibrous tuberculosis of the epididymis. In these cases a rectal examination and guinea-pig inoculation are of inestimable value.

Prostate and seminal vesicle tuberculosis are often difficult to accurately diagnose by simple palpation. The findings are generally one of nodular induration, adhesions and irregulari-

ties. We have prostatectomized two patients unsuspectingly in which the gland or section presented multiple areas of tuberculous necrosis, hence the value of a complete general and urological preview in all cases. That genital tuberculosis often assumes a chronic symptomless course is especially noted in the following case which is characteristic of many in our series.

H. E., aged 74, entered the urological department of the Alexian Brother's Hospital, February 7, 1935, with an attack of acute urinary retention. His former history was not unlike those so frequently seen in the ageing prostatic except normal daily intervals and an unusual frequent nocturia finally ending in complete retention.

Examination revealed, urologically speaking, discharging sinuses from each half of the scrotum, same having been present for over thirty years and had produced no discomfort except for a slight moisture which was not constant. The rectal examination presented a large irregular nodular prostate and definitely nodular and infiltrated seminal vesicles. Both epididymes were indurated, knotted and with considerable enlargement of the lower poles, the sinuses extending from these to the skin of the scrotum.

Cystoscopically, no tubercular ulcerations were found and in addition to an intense cystitis and trigonitis two colossal lateral prostatic lobes.

Roentgenograms of the chest revealed areas of old healed tuberculous processes widely disseminated and definite. Guinea-pig inoculation proved positive and the liver of same was enlarged as were all the lymph glands in the lower portion of the body and especially the inguinal region. Stained smears from these lymph nodes were positive to the tubercular bacilli. A prostatectomy was performed after adequate suprapubic drainage with a satisfactory end result. The vesicles were not removed nor were the epididymes resected. The suprapubic wound was naturally delayed in closing but ultimately closed without further difficulties.

The epididymis greatly receded within a period of six months, less discharge from the scrotal sinuses and as in most of our cases remained dormant.

We have surgically removed the epididymis in thirty-seven cases of unilateral and bilateral epididymal tuber-



Fig. 1. Massive tuberculous necrosis of inguinal glands following guinea-pig inoculation of tuberculous urine.

culosis complicating prostatic hypertrophy and in twenty-two cases either a testicular involvement later appeared, prolonged period of wound suppuration, or a return of sinuses at other areas. We feel that in this instance one's decision depends largely on the individual case, and the past experience in dealing with urological tuberculosis.

We have observed rather a large series of cases of this type in advanced years in which we felt justified in not attempting a wide spread drastic removal of all tuberculous areas. We have resected the epididymi in some cases in which not uncommonly new sinuses appeared which were more troublesome than the original ones, hence we maintain that conservatism is the most satisfactory policy.

Transurethral removal of tuberculous prostatic obstruction has been very satisfactory in our experience and has much to recommend its continued use, a maximum of relief and a minimum of risk.



Fig. 2. Characteristic scrotal dimpling seen in unilateral and bilateral epididymal tuberculosis.

Treatment and Summary. We would consider it presumptuous to attempt any classic classifications, even as a working hypothesis for the correct rationale of the treatment of genital tuberculosis. We feel that, as in all other systemic infections, we are dealing with a primary focus and a secondary involvement. The correct procedure then is to completely eradicate or arrest the primary seat of infection as thoroughly as is feasible and eliminate surgically all secondary seats of probable tuberculous disease, remembering that it is infinitely better to err on the side of safety and practice conservatism. Experience has taught and statistics have definitely proven that the primary area of the seminal tuberculosis is found, in a large percentage of cases, in the prostate gland and seminal vesicles. The epididymes and rarely the testicles are invaded secondarily by way of the lymphatics of the vas deferens and not by way of the vascular supply as has so frequently been contended. The more one sees of genital tuberculosis, the more one becomes impressed with the gravity of the malady and absolute necessity for prompt conservative surgical attack instead of temporizing unduly with palliative measures.

All of our cases of genital tuberculosis have been secondary to either an active or arrested pulmonary

focus, hence one must not overlook some phases of the non-operative care and management, and especially in those cases in which radical surgery is not warranted. Santoria domicile, rest, feeding, heliotherapy, climate and changes of environment have produced results formerly thought impossible of attainment. We have seen cases in our private work and in clinical practice who had large bilateral pulmonary cavities, advanced tuberculosis of the upper urinary tract, greatly contracted, thickened and ulcerated bladders, prostatic epididymal tuberculosis with scrotal sinuses, all, and in various combinations, completely recover under non-operative treatment.

The foregoing appears contradictory and not in keeping with our opening remarks under the heading of treatment, this is quite obvious; however, the point which we desire to impress is that these cases are indeed all entities unto themselves and must be scientifically and intelligently considered as such.

The method of procedure in the care of genital tuberculosis depends largely on the patient's pulmonary status, age and body resistance, the extent of the local involvement, and the distress and urgency of the bladder and prostate. Fortunately in most of the cases seen by us the primary pulmonary condition had long since become quiescent, and our entire attention could be freely focused on the urogenital condition at hand. In not a few cases prostatic and vesicle tuberculosis had been present for years. The disease had been symptomless except for a gradually increasing prostatic obstruction, not unlike the usual symptoms noted in simple glandular proliferation, with no palpable evidence of the disease, diagnosis unsuspected, until the gland was removed and contents noted.

Young in many articles had advocated a complete removal of the prostate, vesicles, ampulla and epididymes as the treatment of choice in seminal tuberculosis. This procedure was successfully carried out by us on two occasions with surprisingly good results, except an absolute impotency, some peroneal and vesicle neck contractions and psychic disturbance following. We have always been amazed with the almost complete amelioration of advanced vesicle and prostatic symptoms following the removal of a tuberculous kidney and ureter; further we have had under our care many cases of extremely involved unilateral renal tuberculosis which were without symptoms, the bacilli discovered accidentally during insurance examinations. In these instances there was no vestige of tuberculosis elsewhere and no recurrence in other urological areas antedating ten to fifteen years. With this well known reaction, as to the behavior of urinary tuberculosis before us, it is not surprising that urologists have not more generally adopted the widespread removal of all tuberculous areas in genital tuberculosis.

It is very difficult to estimate the degree of value of tuberculin; certainly unaided by other measures, slight if any changes are noted in the local findings. However, all will agree that tuberculin in experienced hands does elevate the standards of immunity which greatly fortifies the patient against further progress of the malady.

Roentgen rays following the removal of the epididy-

mes and prostate have facilitated the growth of granulation tissue and hasten the closure of the tuberculous sinuses and surgical incisions. Conservatism we feel should be foremost in most cases of genital tuberculosis. Conservative surgery has been infinitely satisfactory in our experience dating over a period of twenty-five years. Bilateral epididymovasectomy has been performed in a goodly number of patients with a complete subsidence of vesicle symptoms and prostatic findings, three to six months following the operation. In view of the statistical reports that 75% of epididymal tuberculosis ultimately becomes bilateral, we do not hesitate to advise a removal of epididymis and vas on the non-infected side, in most instances and in all cases where sterility has been proven evident.

Testicular tuberculosis was seen in seven cases at the site of epididymal removal; these cases were later curetted and finally the fistula tracts closed satisfactorily. The remaining four cases were subjected to a complete castration which was followed by months of discharging wounds in the inguinal areas and distressing psychic manifestations. The vesicle symptoms in certain instances required constant attention in order to relieve bladder tenesmus, frequency and strangury. Sandalwood oil and other balsamics were given internally and various procedures were used for local bladder care, namely, instillation of gomenol, instillation of iodoform and olive oil, and a host of other well recommended remedies which were helpful in some cases and utterly useless in most. Diathermy to tuberculous ulcers gave satisfactory results in a few cases, urinary sedatives and the continued use of tuberculin was instituted in all instances.

In the final analysis, after reviewing carefully the literature and summarizing our own records, we are of the opinion that little definite substantial progress has been seen in the end results of genital tuberculosis. The evaluation of end results and the surgical principles utilized in the management of these cases appear so diversified that any attempt to standardize methods would be of little value. Finally, while we have attempted to eradicate the tubercular focus surgically, yet it is quite obvious in our series that the most satisfactory and lasting results were seen in the few who for various reasons were not overtreated surgically.

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CORRELATION OF THE BACTERIOLOGICAL AND CLINICAL COURSE IN PHAGE THERAPY OF CHRONIC FURUNCULOSIS OF THE FACE

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In a previous report¹ we called attention to the fact that seemingly there was a direct relationship between the ability of the skin to induce the S to R change in regard to its bacteriological flora and freedom from furuncles. On this basis it was decided to study a few cases of chronic furunculosis of the face for the purpose of observing whether the same principles would apply, and, if there was a lowered ability to produce the S to R mutation, to see whether the application of phage would stimulate such a reaction.

All of the selected subjects had been affected for periods varying from several months to several years. In each case coincident bacteriological and clinical observations were made for several weeks. The sites selected for facial culture were the forehead, right cheek, left cheek and the chin. Simultaneous cultures were also made of the dorsum and palm of the right and left hands to see whether there was any similarity between the flora of the face and that of the hands having in mind the possibility of a mechanical vicious cycle between these two parts of the body because of the frequent approximation of their surfaces.

In obtaining skin cultures, sterile cotton swabs moistened in sterile normal saline were rubbed over the surface to be cultured and were then seeded on to plain agar plates employing a rotatory motion. The plates were incubated for 24 hours and the percentage of S and R colonies was determined by direct count. The plates were then allowed to remain at room temperature overnight to enhance pigmentation. At the end of this time the percentage of pigmented colonies was determined by direct count. We were particularly interested in the presence

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This work was made possible through Eli Lilly and Company, who donated the Staphylo-Jel L950 necessary for the experimentation.

of *Staphylococcus aureus*, *citreus* and *sarcina* and so Gram stained preparations were made in each instance of several representative colonies in order to determine the morphology of the organism producing the colony and to lead to subsequent classification.

Lilly's phage preparation Staphylo-Jel L950 was employed. The patients were instructed to wash their hands and faces with any bland soap before retiring. The skin was dried with a clean towel and an interval of twenty minutes was allowed to elapse in order that the Ph of the skin would return to normal. The Staphylo-Jel was then applied to the hands and face much in the same manner that one would apply cold cream or a lotion. In the morning the hands and face were washed as usual and no phage was applied during the day. The phage was applied to the hands as well as the face in order to rid them, if possible, of the exogenous staphylococci obtained from the face and thus prevent a reseedling of the face from the hands. Five cases were studied over a period of several months. The following protocols show the clinical and bacteriological course.

Case 1. (Mrs. S.) 1. *History*. Has had furunculosis of the face for two years. Had furunculosis of the back for five years. The lesions would improve in the summer but always recurred at the end of the warm weather and persisted until the following summer. When first seen, patient stated that her face was worse than it had ever been. On October 20, 1933, the face and neck were abundant with furuncles. Some of the lesions were $\frac{3}{4}$ of an inch in diameter and of an ugly red color. Some were fluctuant. Frequently the large lesions would open and drain. Where old lesions had occurred and healed, there were discolored scars.

2. *Clinical course*. Treatment was begun on October 20, 1933, after a preliminary culture of the face and hands had been made. About two weeks after treatment had been begun, the face became worse. More lesions appeared and the lesions were redder. After December 1, 1933, improvement began. The old lesions began to disappear. New lesions failed to appear. The fluctuating lesions in most cases dried up without draining. One fluctuating lesion on the neck, one inch in diameter, cleared up completely without draining and without leaving a scar or discoloration. On January 8, 1934, the skin was much improved. The forehead, chin and neck were practically clear and the cheeks markedly better. Treatment was stopped on January 10, 1934. Patient went to Florida for one month but during her stay there was only exposed to the sun for five or six days. On February 20, 1934, the furuncles were entirely gone. There was discoloration in one spot on the right cheek. There were only the scars of the healed lesions of previous years. Seemingly no

scars had resulted from the lesions treated with phage. On May 8, 1934, the face was the same. There had been no recurrence.

3. Bacteriological course.

Date	Area Cultured	Organosin	% Colonies	R %
10-20-33	Forehead	Aureus	50	0
	Chin	Citreus	20	0
	Left cheek	Aureus 14—Citreus....	36	0
	Right cheek	Aureus 1—Citreus....	75	0
	Left palm	Citreus	80	0
	Right palm	Citreus	50	0
	Back left hand	Citreus	95	0
	Back right hand	Citreus	95	0
11-11-33	Forehead	Aureus	1	0
	Chin	Aureus	5	0
	Left cheek	Aureus	6	0
	Right cheek	Aureus	10	0
	Left palm	Aureus	0	0
	Right palm	Aureus	0	0
	Back left hand	Aureus	0	0
	Back right hand	Aureus	0	0
11-25-33	Forehead	Aureus—less than	1	4
	Chin	Aureus	1	8
	Left cheek	Aureus	8	0
	Right cheek	Aureus	15	0
	Left palm	Aureus	0	0
	Right palm	Aureus	0	0
	Back left hand	Aureus	0	0
	Back right hand	Aureus	0	0
12- 9-33	Forehead	Aureus	4	12
	Chin	Aureus	20	8
	Left cheek	Aureus	10	0
	Right cheek	Aureus	27	4
	Left palm	Aureus	12	8
	Right palm	Aureus	14	32
	Back left hand	Aureus	2	20
	Back right hand	Aureus	1	8
1- 3-34	Forehead	Aureus	0	4
	Chin	Aureus	25	12
	Left cheek	Aureus	4	0
	Right cheek	Aureus	30	0
	Left palm	Aureus	1	4
	Right palm	Aureus	2	0
	Back left hand	Aureus	0	100
	Back right hand	Aureus	0	0
1- 8-24	Forehead	Aureus—less than	1	32
	Chin	Aureus	11	20
	Left cheek	Aureus	1	0
	Right cheek	Aureus	14	0
	Left palm	Aureus	0	0
	Right palm	Aureus	0	0
	Back left hand	Aureus	0	0
	Back right hand	Aureus	0	4
2-20-34	Forehead	Aureus	0	0
	Chin	Aureus—less than	1	2
	Left cheek	Aureus	0	0
	Right cheek	Aureus	5	2
	Left palm	Aureus	0	0
	Right palm	Aureus	0	0
	Back left hand	Aureus	0	0
	Back right hand	Aureus	0	0

Case 2. (Miss B.) 1. *History*. Onset in August, 1933. Affected with small pimples which were most common on the forehead and chin, but occasionally on the cheeks. Skin had always been clear before. When the pimples appeared they would last at least a week before disappearing. Others kept appearing continuously so that the skin was never entirely free from lesions.

2. *Clinical Course*. One week after beginning treatment, the skin was worse in the sense that pimples appeared more rapidly and they were a much brighter red in color. This lasted about five days and then

improvement was noticed. Pimples appeared less frequently and would last four to five days.

Clinical improvement continued up to December 21 when several new lesions developed on the chin. These disappeared in five days.

At Christmas time patient took a two weeks' trip to Florida. From December 31, 1933, until January 6, 1934, she was entirely off the treatment due to loss of medication. During her trip she was exposed at intervals to the sunshine. Upon her return, her face was clinically practically as bad as when she first came for treatment. Since that time she has shown no improvement.

3. Bacteriological Course.

Date	Area Cultured	Organism	%	R Colonies	
				%	
10-24-33	Forehead	Aureus	95	0	
	Chin	Aureus	95	0	
	Left cheek	Aureus	0	0	
	Right cheek	Aureus	85	0	
	Left palm	Aureus	50	0	
	Right palm	Aureus	50	0	
	Back left hand	Aureus	75	0	
	Back right hand	Aureus	50	0	
11-7-33	Forehead	Aureus	75	0	
	Chin	Aureus	95	0	
	Left cheek	Aureus	75	0	
	Right cheek	Aureus	75	0	
	Left palm	Aureus	66	0	
	Right palm	Aureus	75	0	
	Back left hand	Aureus	66	0	
	Back right hand	Aureus	90	0	
11-26-33	Forehead	Aureus	55	2	
	Chin	Aureus	70	2	
	Left cheek	Aureus	80	3	
	Right cheek	Aureus	66	0	
	Left palm	Aureus	16	0	
	Right palm	Aureus	66	0	
	Back left hand	Aureus	50	0	
	Back right hand	Aureus	14	0	
12-2-33	Forehead	Aureus	55	0	
	Chin	Aureus	90	0	
	Left cheek	Aureus	50	16	
	Right cheek	Aureus	60	4	
	Left palm	Aureus	10	0	
	Right palm	Aureus	40	44	
	Back left hand	Aureus	50	0	
	Back right hand	Aureus	25	0	
12-20-33	Forehead	Aureus	30	0	
	Chin	Aureus	99	0	
	Left cheek	Aureus	30	0	
	Right cheek	Aureus	31	0	
	Left palm	Aureus	25	0	
	Right palm	Aureus	45	1	
	Back left hand	Aureus	12	0	
	Back right hand	Aureus	75	0	
1-20-34	Forehead	Aureus	30	4	
	Chin	Aureus	0	12	
	Left cheek	Aureus	80	4	
	Right cheek	Aureus	50	0	
	Left palm	Aureus	64	0	
	Right palm	Aureus	66	0	
	Back left hand	Aureus	72	0	
	Back right hand	Aureus	55	0	
2-3-34	Forehead	Aureus	28	8	
	Chin	Aureus	50	12	
	Left cheek	Aureus	80	8	
	Right cheek	Aureus	80	8	
	Left palm	Aureus	66	0	
	Right palm	Aureus	50	0	
	Back left hand	Aureus	25	0	
	Back right hand	Aureus	25	0	

Case 3. (Mr. J.) 1. *History*. Patient has been afflicted with a generalized furunculosis of the face and neck for 13 years. The furuncles were of the type that were red and indurated, occasionally developed a white apex but never became fluctuant. When healing occurred, in many cases small scars developed which were permanent. During this period the patient had employed various ointments, steam baths, and ultra-violet irradiation with no beneficial effect. Exposure to the sun in the warm months was of little if any benefit.

2. *Clinical Course*. The initial culture of the face was made on November 8, 1933. Treatment was begun as outlined above. For approximately six weeks there was no noticeable effect. Beginning about December 20, 1933, the face became worse. More furuncles appeared and the lesions were much redder. By January 8, 1934, there was definite evidence of improvement. From this time on the following facts were noted. Fewer lesions appeared. Large lesions which used to last for three weeks would disappear in one week. The smaller lesions which formerly persisted for a week would fade in from one to three days. Upon resolution of the lesions there was no scar formation. The face was generally much better appearing. From February 1 to 16, 1934, there was little change. Small lesions would appear occasionally and rapidly fade. On February 16, 1934, patient was removed from treatment. His condition remained the same for about ten days. At the end of this time he requested that treatment be reinstituted inasmuch as more numerous lesions were evident although the lesions were quite small. He was advised to use the phage twice a week as a prophylactic measure. As long as the phage was employed his face remained relatively clear of new lesions. Without the use of the phage small furuncles would appear. The patient left Chicago for his home the latter part of May feeling that he had been benefited although not completely cured.

3. Bacteriological Course.

Date	Area Cultured	Organism	%	R Colonies	
				%	
11-8-33	Forehead	Citrus 10—Aureus	20	36	
	Chin	Citrus	1	40	
	Left cheek	Citrus 14—Aureus	8	28	
	Right cheek	Citrus	10	36	
	Left palm	Citrus 20—Aureus	16	8	
	Right palm	Citrus 20—Aureus	14	16	
	Back left hand	Citrus 16—Aureus	10	0	
	Back right hand	Citrus	25	0	
11-27-33	Forehead	Citrus	25	24	
	Chin	Citrus—less than	1	40	
	Left cheek	Citrus 16—Aureus	45	16	
	Right cheek	Citrus	33	28	
	Left palm	Citrus	30	28	
	Right palm	Citrus	30	8	
	Back left hand	Citrus	95	4	
	Back right hand	Citrus	95	8	
12-20-33	Forehead	Citrus	4	12	
	Chin	Citrus—less than	1	44	
	Left cheek	Citrus	12	8	
	Right cheek	Citrus	14	48	
	Left palm	Citrus	20	0	
	Right palm	Citrus	25	8	
	Back left hand	Citrus	20	0	
	Back right hand	Citrus	25	0	
1-8-34	Forehead	Citrus	12	16	
	Chin	Citrus—less than	1	56	

	Left cheek	Citrus	10	24
	Right cheek	Citrus	0	36
	Left palm	Citrus	.86	0
	Right palm	Citrus	.95	0
	Back left hand	Citrus	.86	8
	Back right hand	Citrus	.90	0
1-20-34	Forehead	Citrus	.7	16
	Chin	Citrus—less than	.1	40
	Left cheek	Citrus	.20	32
	Right cheek	Citrus	.10	40
	Left palm	Citrus	.6	20
	Right palm	Citrus	.40	7
	Back left hand	Citrus	.50	8
	Back right hand	Citrus	.36	12
2-16-34	Forehead	Citrus	0	8
	Chin	Citrus	0	4
	Left cheek	Citrus	0	4
	Right cheek	Citrus	0	8
	Left palm	Citrus	0	0
	Right palm	Citrus	0	0
	Back left hand	Citrus	0	0
	Back right hand	Citrus	0	0
2-27-34	Forehead	Citrus 0—Aureus	.6	0
	Chin	Citrus 0—Aureus	0	12
	Left cheek	Citrus 0—Aureus	.5	22
	Right cheek	Citrus 0—Aureus	.3	26
	Left palm	Citrus 0—Aureus	.6	0
	Right palm	Citrus 0—Aureus	0	0
	Back left hand	Citrus 0—Aureus	0	0
	Back right hand	Citrus 0—Aureus	0	0
3-19-34	Forehead	Citrus	0	4
	Chin	Citrus	0	16
	Left cheek	Citrus	0	16
	Right cheek	Citrus	0	8
	Left palm	Citrus	0	16
	Right palm	Aureus	.16	24
	Back left hand	Citrus	0	10
	Back right hand	Citrus	0	10
4-10-34	Forehead	Citrus	0	24
	Chin	Citrus	0	52
	Left cheek	Citrus—less than	.1	68
	Right cheek	Citrus—less than	.1	24
	Left palm	Citrus	0	12
	Right palm	Aureus	.95	0
	Back left hand	Aureus	.95	16
	Back right hand	Aureus	.1	0

Case 4. (Miss W.) 1. *History.* Patient is 28 years of age. She has had her present condition for ten years. During this period she has never been entirely free from pimples. In general the pimples were of the type that never seemed to come to the surface of the skin although occasionally some would become red with a white apex.

2. *Clinical Course.* Treatment was begun on August 12, 1933. Ten days later the face appeared to be worse in that the pimples seemed to all come to the surface and were a much brighter red. This persisted for ten days. Then improvement began and was continuous until October 17, 1933, when the skin was entirely free. Treatment was stopped on October 27, 1933.

Patient remained normal until January 23, 1934, when the skin once more erupted especially on the forehead and chin. She was allowed to proceed until February 13, 1934, without treatment to see if the skin would spontaneously clear. There was no improvement and so phage therapy was once more instituted on February 13. Three days after beginning treatment the face became worse. Four days later improvement began and by February 23 it was normal.

On March 5 a furuncle developed on the chin which

was red, hard, non-fluctuant and about one centimeter in diameter. Phage was used daily on the lesion and every other day was applied to the entire face. By March 10 the lesion was almost imperceptible.

Since that time small pimples appear at intervals and then spontaneously disappear. It would seem that perhaps the skin is slightly more resistant but otherwise the condition is practically unchanged.

3. *Bacteriological Course.*

Date	Area Cultured	Organism	%	R Colonies	
				%	
8-12-33	Forehead	Sarcina	.75	0	
	Chin	Sarcina	.25	10	
	Left cheek	Sarcina	.75	2	
	Right cheek	Sarcina	.75	4	
	Left palm	Sarcina	.50	0	
	Right palm	Sarcina	.50	0	
11-25-33	Back left hand	Sarcina	.66	0	
	Back right hand	Sarcina	.75	0	
	Forehead	Sarcina	.10	4	
	Chin	Sarcina	0	8	
	Left cheek	Sarcina	.33	24	
	Right cheek	Sarcina	.50	8	
12-9-33	Left palm	Sarcina	0	0	
	Right palm	Sarcina	0	0	
	Back left hand	Sarcina	.6	0	
	Back right hand	Sarcina	0	0	
	Forehead	Sarcina	.16	20	
	Chin	Sarcina—less than	.1	20	
1-25-34	Left cheek	Sarcina	.20	34	
	Right cheek	Sarcina	.45	24	
	Left palm	Sarcina	.30	8	
	Right palm	Sarcina	.5	4	
	Back left hand	Sarcina	.38	24	
	Back right hand	Sarcina	.20	20	
2-1-34	Forehead	Sarcina	.88	2	
	Chin	Sarcina—less than	.1	10	
	Left cheek	Sarcina	.86	0	
	Right cheek	Sarcina	.86	4	
	Left palm	Sarcina	.80	0	
	Right palm	Sarcina	.50	0	
2-28-34	Back left hand	Sarcina	.66	4	
	Back right hand	Sarcina	.75	40	
	Forehead	Sarcina—less than	.1	24	
	Chin	Sarcina	.45	16	
	Left cheek	Sarcina	.70	8	
	Right cheek	Sarcina	.64	4	
3-10-34	Left palm	Sarcina	.75	0	
	Right palm	Sarcina	.33	0	
	Back left hand	Sarcina	.14	4	
	Back right hand	Sarcina	.33	0	
	Forehead	Sarcina 20—Aureus	.6	28	
	Chin	Sarcina—less than	.1	6	
5-10-34	Left cheek	Sarcina 25—Aureus	.16	8	
	Right cheek	Sarcina 0—Aureus	.70	8	
	Left palm	Sarcina	.66	0	
	Right palm	Sarcina	.40	0	
	Back left hand	Sarcina	.55	12	
	Back right hand	Sarcina	.63	8	
	Forehead	Sarcina	.67	0	
	Chin	Sarcina—less than	.1	16	
	Left cheek	Sarcina 46—Aureus	.1	4	
	Right cheek	Sarcina 24—Aureus	.5	16	
	Left palm	Sarcina 50—Aureus	.5	0	
	Right palm	Sarcina 45—Aureus	.0	0	
	Back left hand	Sarcina 20—Aureus	.5	3	
	Back right hand	Sarcina 50—Aureus	.0	50	
	Forehead	Sarcina	.35	24	
	Chin	Sarcina—less than	.1	8	
	Left cheek	Sarcina	.55	2	
	Right cheek	Sarcina	.50	2	
	Left palm	Sarcina	.50	0	
	Right palm	Sarcina	.0	0	
	Back left hand	Sarcina	.30	0	
	Back right hand	Sarcina	.50	0	

Case 5 (Miss B). 1. *History.* Patient is 34 years of age and has been afflicted for approximately 10 years with furuncles appearing on any part of the face. The lesions varied in size from small ones about the size of the head of a pin to as large as five millimeters. Most of them were red and hard and did not become fluctuant. Occasionally large ones would occur which went on to fluctuation and some of these upon healing left scars.

2. *Clinical Course.* Treatment was begun on December 2, 1933, and was as has been previously described. About two and one-half weeks after beginning treatment the face became worse. This lasted about ten days and then improvement was noticed. By February 3, 1934, the condition was so much better that the phage was used every other day instead of daily. Those furuncles that occurred were very small and would last approximately one day. On February 24, 1934, patient was advised to use the phage every third day. On April 15, 1934, treatment was stopped. At this time furuncles rarely appear and would last only one day. When last seen in June, 1934, the patient's face appeared to be in good condition and she felt that her condition was much better than it had ever been previously.

3. Bacteriological Course.

Date	Area Cultured	Organism	%	R Colonies %
12- 2-33	Forehead	Citrus	16	2
	Chin	Citrus	7	10
	Left cheek	Citrus	2	6
	Right cheek	Citrus	3	2
	Area Cultured	Citrus	6	4
Date	Right palm	Citrus	10	8
	Back left hand	Citrus	16	7
	Back right hand	Citrus	25	0
	Forehead	Citrus—less than	1	4
	Chin	Citrus	0	0
	Left cheek	Citrus—less than	1	4
	Right cheek	Citrus—less than	1	12
	Left palm	Citrus	1	0
	Right palm	Citrus	5	0
	Back left hand	Citrus	6	0
2- 3-34	Back right hand	Citrus	1	4
	Forehead	Citrus	0	4
	Chin	Citrus	0	16
	Left cheek	Citrus	0	0
	Right cheek	Citrus	0	0
	Left palm	Citrus	4	0
	Right palm	Citrus	0	0
	Back left hand	Citrus	0	0
	Back right hand	Citrus	1	0
	Forehead	Citrus	0	4
2-24-34	Chin	Citrus	0	12
	Left cheek	Citrus	0	2
	Right cheek	Citrus	0	0
	Left palm	Citrus	0	0
	Right palm	Citrus	0	0
	Back left hand	Citrus	0	0
	Back right hand	Citrus—less than	1	0
	Forehead	Citrus	0	4
	Chin	Citrus	0	4
	Left cheek	Citrus	0	4
3-12-34	Right cheek	Citrus	0	4
	Left palm	Citrus	0	0
	Right palm	Citrus	0	0
	Back left hand	Citrus	0	0
	Back right hand	Citrus	1	0
4-15-34	Forehead	Citrus	0	10
	Chin	Citrus	0	4
	Left cheek	Citrus	0	0
	Right cheek	Citrus	0	0

Left palm	Citrus	0	1
Right palm	Citrus	0	0
Back left hand	Citrus	0	0
Back right hand	Citrus	0	0

SUMMARY

1. The application of staphylococcus phage to the face in cases of chronic furunculosis results in an exacerbation of the condition in from 10 to 21 days.

2. Until this exacerbation occurs, clinical improvement does not take place.

3. In those cases responding well, clinical improvement seems to be associated with a disappearance of the aureus and citreus strains of staphylococci initially from the hands and secondarily from the face.

4. When there is no diminution in the number of pigmented staphylococci, there is no marked improvement and phage therapy seems to be of no avail.

5. When the skin flora is primarily sarcina, phage therapy has little, if any, effect on this type of flora and there is only a transient clinical improvement.

6. There is evidence of an association between the ability of the skin to induce the S to R change and improvement.

7. Phage therapy seems to stimulate rough colony formation to some degree.

8. Because of the fact that the flora of the face and hands are similar, it would be logical to assume that the hands are continually playing a part in seeding new surfaces of the face and reseeding old surfaces.

State Department of Public Health.

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A COMPARATIVE STUDY OF STANDARDS FOR NORMALS IN BASAL METABOLISM TESTS

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Some time ago it was brought to the writer's attention that, in some cases at least, the value reported for a basal metabolic rate determination is dependent upon the standards for normals that are used. With a view to learning the extent of the variation noticed, the following study was undertaken.

A series of one hundred actual determinations

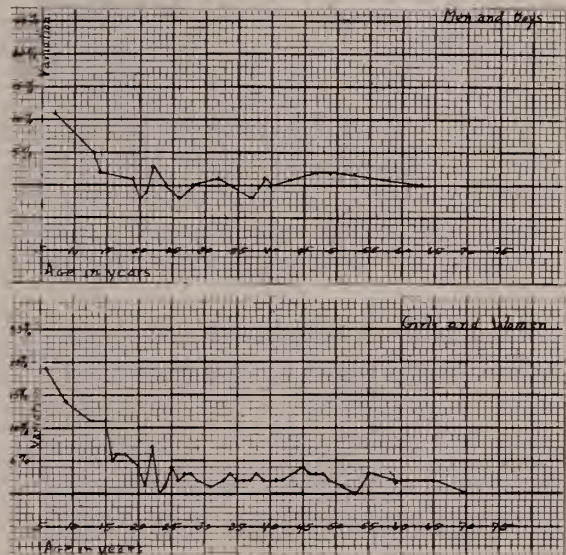
was used as the basis for this study. These determinations were made on three different metabolimeters: the Sanborn machine with a motor, the Sanborn machine without a motor, and the Jones metabolimeter without a motor. The actual oxygen consumption for each test was listed along with the essential information for determining the individual normal. It was from this point that calculation was begun. Each normal was calculated 1. according to the standards given in the new Sanborn book of metabolism tables (April, 1935); 2. according to the standards given in the book of instructions for the Sanborn Graphic Metabolism Tester (September, 1929), and 3. according to the modified Aub and DuBois standards as calculated on the slide rule now obtainable with the Jones machine. In the second group of standards there is an overlapping of adults' and children's tables for the ages of 14-20. In these cases, the normals were obtained from both sets of tables. All of these different standards are in use at the present time by various laboratories and technicians.

Since the results from the Sanborn machine are expressed in the number of cc. of oxygen used per minute, and the results from the Jones machine are expressed in the number of minutes required to use a liter of oxygen, each test result had to be converted from its original form to the other so that all standards might be used. This was done by means of the following formulae:

1. From Sanborn to Aub and DuBois
- $$\frac{1000}{\text{cc. of oxygen per minute}} = \text{No. of minutes required to use one liter of oxygen}$$
2. From Aub and DuBois to Sanborn
- $$\frac{1000}{\text{No. of minutes required to consume one liter cc. of oxygen used per minute}} = \text{The minutes per liter were expressed to the nearest one-eighth minute, and the number of cc. per minute were expressed to the nearest cc.}$$

As the actual consumption of oxygen was the same in any one case regardless of the standards used for calculating the normal rate, any variation that occurred was due to a variation in the normal as determined from the different stand-

ards. Some difference was to be expected due to the fact of conversion from one form of expressing actual oxygen consumption to another form, and also to the fact that interpolation was necessary on the tables. But such differences are not great enough to have any clinical significance.



Upper Chart. Deviation of 1935 Sanborn standards from modified Aub & Du Bois standards for males.
Lower Chart. Deviation of 1935 Sanborn standards from modified Aub & Du Bois standards for females.

The ages for these tests ranged from 6 to 10 years. The graphs given below show the amount of variation for the two sexes at the different ages between the Aub and DuBois and the Sanborn 1935 standards, the results calculated from the Aub and DuBois standards being arbitrarily taken as the zero line. For example, if the test results according to DuBois standards for a boy 7 years old were -19% and by the Sanborn standards were -9%, the graph point for that test would be at plus 10 because the result is 10% higher than the zero line result. Where the same age appeared more than once, the variations for that age were averaged. No attention was paid as to whether or not the test fell within the normal limits.

The graph line for the 1929 Sanborn standards agrees quite closely with that of the 1935 standards in contour and amplitude. However, these standards do not take care of children below the age of 14, and to obtain normals for these young people it was necessary to use the old 1924 Benedict standards for girls and the Harris-

Benedict standards of 1919 for boys. It was here that the greatest variation was shown. The results were way out of line as compared to the results of the other normals, and the values on the tests on girls were more erratic than those on the tests on boys.

The following table shows in detail the variations for the tests on ages 6 to 20, inclusive, as it is in this age group that the greatest differences occur.

Age	% Aub. & DuBois	% Sanborn, 1935	% Sanborn, 1929, 14 years and up	% Harris Benedict, 1919	% Benedict, 1924	% Greatest Variation	Sex
7	-23	-12	..	+ 4	..	27	M
13	-14	- 9	..	+ 2	..	16	M
14	+ 9	+11	+18	+25	..	16	M
19	- 5	- 7	- 4	- 2	..	5	M
20	- 5	- 7	- 4	- 5	..	3	M
6	+ 4	+23	..	..	+38	34	F
9	± 0	+14	..	..	+54	54	F
13½	-17	- 6	..	..	+ 6	23	F
15	+ 6	+19	+15	..	+16	13	F
15	- 8	± 0	- 2	..	+ 4	12	F
15	- 5	+ 5	+ 1	..	+ 7	12	F
16	-12	- 7	-10	..	+ 3	15	F
16½	-17	-11	-13	..	- 3	14	F
16½	-12	- 6	- 8	..	- 3	9	F
18	- 7	- 2	- 4	..	+11	18	F
18	- 9	± 0	- 2	..	+22	31	F
18	-23	-15	-20	..	- 6	17	F
18	± 0	+ 3	± 0	..	+20	20	F
19	-25	-20	-22	..	+ 1	26	F
20	-20	-12	-12	..	± 0	20	F
20	+20	+22	+21	..	+54	34	F
20	- 1	+ 1	± 0	..	+30	31	F
20	-10	- 8	- 8	..	+18	28	F

A study of variations when the tests were grouped according to whether or not the results fell within the normal range shows that relative position in the range is not a factor in producing variation.

CONCLUSIONS

1. There is a variation in the results of basal metabolic rate tests which is dependent upon the standards used for figuring normals.

2. This variation is greatest for children.

3. The variation for people over 21 years of age is not great enough to be of any clinical significance.

4. The variation for any age is not constant.

5. It is suggested that the standards used be indicated on basal metabolism reports.

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ASTHMA

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The ghastly picture of the victim of an asthmatic attack struggling for his breath is so familiar to all of us that we need not introduce this subject with a definition.

In considering the advisability of presenting a paper on the subject, it was suggested that it would be worthwhile if I could give you something *new*. A survey of the methods of treatment of this condition brings the thought to mind that there is no short cut to success in the treatment of asthma. Its synonym still remains "the most mismanaged disease." But I can, and I do, emphasize something quite *old* in this connection and that is—the etiology.

Here at Ravenswood Hospital (and I must acknowledge the value of our library and the help of our librarians in making this material available) we have accumulated about 55 cases for study. We find in this series allergic causes; non-allergic causes, such as chronic bronchitis, pulmonary tuberculosis, cardiac disease, renal disease, enlarged bronchial glands, etc.; and non-specific exciting causes, such as damp or cold weather, dust, smoke, or irritating gases, reflex influences from nose and throat, gastrointestinal tract or liver. We have excluded some cases because of insufficient stay in the hospital for proper evaluation of the findings and others because essential laboratory procedures are missing.

About 60% of the patients studied were between thirty and sixty years of age, and there was an almost equal division by sexes—one less male, in fact. (Table 1). About 42% of the cases were uncomplicated bronchial asthma, 18% were complicated by a cardiac or renal lesion, 16% had other lung involvement, i.e., tuberculosis, bronchiectasis or chronic bronchitis. It is interesting to note that 12% manifested some skin lesion, as eczema, urticaria or similar condition. The other 12% had some pathologic condition of the nose and throat. (Table 2.) Another noteworthy feature is the surprisingly large number who had had a previous influenza, pneumonia or respiratory tract infection. Of the cases of true

bronchial asthma, practically all were found to be allergic to something with which they came in contact, or their history suggests that angle.

The asthmatic patients seen at this hospital are, in the main, those who are well along in their disease, those who are in extremis, or those who come in for relief when their symptoms are the most severe; but this analysis shows that it is in the field work—among those patients who come to our offices or whom we visit in their homes—that we can best benefit the patient by an early consideration of the etiologic factors.

Our percentage for allergic causes is slightly lower than that usually given by other students of this subject, who tell us that over 50% of their cases present an allergic phase as an etiologic factor, as opposed to our 42%. This difference is probably accounted for by our age incidence, most of our cases being in the middle age group, as mentioned above. It is emphasized for us, therefore, that the allergic causes are to be expected in the younger age groups, i.e., below the ages of 30-35 years. Above this age, or above the ages of 35 to 40 years, we look for the bacterial infections, the non-allergic causes and, especially above the age of 50 years, should we be on the alert for those cases for which cardiovascular and cardiorenal changes are responsible. Of course, these statements are general. They can hardly be otherwise when we consider that the asthmatic patient who starts with a single cause or a single group of causes for his ailment has soon, by the very nature of conditions, developed complications which make it difficult to decide which is the cart and which the horse in this sequence of physiologic and pathologic changes occurring as a result of repeated attacks. We must constantly bear in mind that one type of asthma (again speaking etiologically) may be superimposed on or associated with another type of asthma. And these very generalities teach us that a careful, searching history is the only safe starting point for an investigation which will call for tests for hypersensitivity, laboratory tests of the blood (eosinophilia), the sputum (Curschmann's spirals, Charcot-Leyden crystals, bacteria) and urine, or for an electrocardiographic study of the heart or an x-ray study of both heart and lungs.

I will omit the details of specific skin tests for sensitivity but merely emphasize that while

the tests can not be omitted for accurate information they are undertaken only after the careful history, of which I have spoken, is taken, and then considered in conjunction with all other findings.

To most of us the term "asthma" means a spasmodic contraction of the bronchioles, lasting from a few minutes to a few hours. But there is a definite change in the physical economy of the allergic asthmatic. One of these changes is so definite and so constant that it is almost pathognomonic. I refer to the eosinophilia in the blood and in the sputum. This exists and must co-exist with a further infiltration of the eosinophiles in the peribronchial tissues or we have not a true bronchial asthma. On the other hand, not all cases of asthma are allergic in type, and it is this point which I wish to emphasize; namely, that we must determine which is allergic and which is not, or we do not treat the patient fairly nor our own intelligence with respect.

Bacterial infection may readily cause a bronchial stenosis and a consequent asthma. In fact, work is going forward now at Guy's Hospital in London attempting to evaluate the asthmagenic properties of Friedlander's bacillus. In the 1932 report of the Asthma Research Council¹ they assert ". . . there is evidence that injections of Gram-negative organisms of this type (Friedlander) produce much greater changes in the body chemistry than injections of Gram-negative cocci."

In regard to the pathology of asthma, we can hardly do better than to peruse the work of Koessler and Huber² in which they survey the literature relative to this angle from 1886 on. I refer to it here briefly that proper credit be given for their investigations. Their almost uniform finding was that the actual thickness of the walls of the bronchioles was definitely increased as compared with similar structures in non-asthmatic patients.

There are other pathologic findings which vary somewhat; such as, the filling of bronchioles with mucus, the presence of strings of tightly wound fibrin (Curschmann's spirals) in the bronchioles. Almost invariably there is more or less infiltration of small, round cells in the mucous, muscular or glandular layers. The glands, while usually hypertrophied, may be secondarily atrophied; the muscular layer is usually increased in

thickness. However, the one feature which remains most helpful, in my opinion, in converting the pathologic findings to an understanding of the etiology is the picture of the eosinophilia already mentioned.

Not so long ago the thought was advanced that these eosinophiles were autochthonous; that is, they were formed in the vicinity of these sick and distended bronchioles. Now, however, I believe the pendulum is swinging away from that viewpoint. But no matter where they are formed, whether autochthonously or in the long bones, they indicate, when present, the allergic character of the disease. If they are absent consistently in repeated examinations of the blood and the sputum, it means that the asthma is produced by a non-allergic cause or that the "reactability" of the patient is very, very low.

Now, just a few words about treatment. First of all, I believe the asthmatic should be treated between attacks. I do not believe that the dyspneic crisis of asthma is the whole picture any more than the convulsive seizure of epilepsy represents the beginning and end of that disease. The patient must be gone over very carefully and as many of the etiologic factors isolated and subsequently eliminated as is possible. In all cases, both in the hypersensitive asthmatic and the non-sensitive asthmatic, an attempt should be made to improve the general and mental hygiene. The mental hygiene because they are all apprehensive; therefore they should be taught to avoid emotional crises and over fatigue. The first consideration in the non-sensitive case is the search for and removal of possible infective foci. If present, the advisability of using an autogenous vaccine from that source or from the sputum can be considered. Or the possibility of x-ray treatments over both hili and the spleen. The hypersensitive individual is treated either with the specific protein or, if the bacterial infection is most pronounced, with a stock vaccine. I have found solutions of peptone, milk, or typhoid vaccines of little value. If it is necessary to start treatment during or shortly after an acute flareup, I follow the intracutaneous route, using one-tenth the dose usually given subcutaneously. The intracutaneous method is used because there may well be a characteristic change in the reticulo-endothelial system of these indi-

viduals, as some workers hold. At any rate, all of these patients present a greater permeability of their mucous surfaces.

On the hypothesis that these patients possess an alkalosis, I have prescribed a ketogenic diet. I have followed such a diet myself and have had others do so and I have been greatly disappointed. That also is true of the capsules some of the pharmaceutical houses have put out to promote a mild acidosis. These individuals do seem to do better, however, if their blood sugar is kept low or they are given enough exercise to burn up their excess glycogen.

As for the attack: I have lived through the time when all of these patients were given a "shot" of morphine and atropine and a prescription for potassium iodide or were given stramonium leaves to burn. Then, when epinephrine was introduced every doctor thought he had discovered something. I believe that smaller doses (.4 to .8 c.c.) of epinephrine, repeated if necessary, are better than larger doses pushed to the point of causing hyperirritability of the nervous system. I frequently add about one-third of the total dose (.3 to .4 c.c.) of pituitrin to the adrenal extract. I believe I get longer relief from less dosage. I have given epinephrine by mouth, by rectum and by inhalation, all without a great deal of effect. The latest method of giving it in an increased strength of 1:100 by inhalation is quite effective, however. But it has the one decided disadvantage of taking the medication out of the doctor's hands and permitting the patient to use a powerful agent promiscuously. I have had patients do this and become apparently "epinephrine fast," that is, it takes larger and larger doses to obtain a questionable amelioration of the symptoms.

Under these circumstances I have given fairly large doses of sodium iodide intravenously. I have given large doses of sodium chloride (3-6 gm. in 240 c.c. of water) after the manner of the Pottengers³ in California, and I have used helium gas in an oxygen tent. This last measure is in partial accord with the practice of Barach of Columbia University, who developed the therapeutic use of helium,^{4, 5} and it was resorted to in desperation for a patient having what we might call a "status asthmaticus" in which epinephrine was not effective. The success achieved

in this method is probably due in great part to the enforced rest and supportive treatment.

A word or two about helium might not be amiss. Helium is a light gas and, so far as known, is as inert in the body as is nitrogen. A light gas favors aeration of the lung by more ready and greater diffusion and by the mechanical displacement of the heavier air during expansion and contraction of the chest wall. There are certain difficulties in its use, however. For instance, helium costs six or seven times as much as oxygen. Again, it is hard to keep in captivity. Being a light gas, it escapes readily through a small leak. It is used in the proportion of three or four parts of oxygen to one of helium. For the greatest benefit, it should be used in a re-breathing apparatus, and Barach suggests it be given with a pressure of 5-15 cm. of water. There is a report of its use at the Mayo Clinic⁶ by means of a closed oxygen tent; that is, the lower part was closed about the neck of the patient with a zipper-like arrangement. I believe that the use of this gas in this type of patient will be very beneficial and that it will contribute much comfort to the asthmatic.

Another medication I have found helpful in prolonging the effect of the epinephrine is histidine, using three or four doses at three hour intervals. Apparently it has the ability to stimulate the activity of the adrenal glands in the individual. Care must be used not to push the dosage too far because an excessive dosage produces a hyperirritability similar to that caused by an excess of ephedrine. For that reason I do not use it in the asthma-free interval. Ephedrine I have found in general to be somewhat less useful than adrenal extract. To get away from its adverse effects it is frequently desirable to add 1/4 to 1/2 gr. of phenobarbital.

To summarize: I would emphasize the careful search for all possible etiologic factors, underlining them in the history in the order of their apparent significance. I would be guided in this search by a careful, painstaking history, considering age at onset, heredity, seasonal appearance, physiologic coefficient of the cardiovascular, cardiorenal apparatus; and, when it comes to treatment, I would treat the patient and not the attack alone.

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TABLE 1—CLASSIFICATION BY AGE AND SEX

Age Groups	Male	Female	Total
Birth to 10 years.	2	2	4
11 to 20 years.....	..	2	2
21 to 30 years.....	3	3	6
31 to 40 years.....	4	6	10
41 to 50 years.....	7	4	11
51 to 60 years.....	6	3	9
61 to 70 years.....	2	6	8
71 to 80 years.....	1	1	2
81 years and over.....	2	1	3
Total	27	28	55

TABLE 2—COMPLICATIONS

Complicating Conditions	Patients	
	No.	%
Lung	8	16
Nasal	8	12
Cardiovascular and Renal.....	10	18
Skin (Eczema, etc.).....	7	12
None recorded	23	42
Total	56	100

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A CRITICAL EXAMINATION OF RECENT ADVANCES IN OBSTETRICS

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In speaking of recent advances in obstetrics, perhaps it would be well to qualify the term for the purpose of this paper. By "recent advances" I do not mean the most recent acquisitions to our knowledge such as the researches of the last year might add. I have chosen rather to evaluate some of the more important contributions to the subject, made during the last five years, thus allowing a period of time to elapse for a more perfect crystallization of those ideas which might be of permanent value.

It seems logical to begin with the chapter concerning the laboratory diagnosis of pregnancy.

Read before the Christian County Medical Society, January 30, 1936.

Definite advances are recorded here. The principles of the original Aschheim-Zondek test for pregnancy are well known to all of you. This test, as originally devised, required five test animals and ninety-six hours for completion. It was found too long and too difficult for routine clinical use and at the present time out of it has come the Friedman-Schneider test. This latter requires an immature female rabbit with or without a control animal and the results are available within twenty-four to forty-eight hours, a marked improvement in time and labor. Enough is known of the practical value of this test to assure its permanent usefulness. King has shown in a series of 4,515 cases collected from the literature that the gross error of this test is 3.9%. He calls attention to the fact that the test should aid but not supplant the usual clinical diagnostic examination.

The test is also employed in the diagnosis of hydatidiform mole and chorioepithelioma. It has been demonstrated by Mack and Catherwood that the elimination of a prolan-like substance in the urine is two to three times greater in these conditions than in a normal pregnancy. Positive Friedman tests have since been obtained with dilutions in 1:20 and even higher in cases of chorioepithelioma. The test, therefore, is a quantitative one for diagnosis; likewise, it is extremely valuable in the prognosis as it may detect recurrences or distant metastases by its extreme sensitiveness. It should be carried out for a period of two to three years following the removal of an original lesion. It may be said in passing that without the Aschheim-Zondek technic, as originally employed, there might not have been a Friedman-Schneider test. There are many modifications of the test such as the Goodale and Flanagan ovarian transplantation technic, but these are of interest to the laboratory worker only.

Within the last year there has been proposed a simpler laboratory test for the diagnosis of pregnancy. This is the Japanese Bitterling test of Kanter and his workers. It is also a biologic test based upon the rapid growth of the ovipositor in these fishes caused by an excess of estrogenic substance in the urine of pregnant women. The procedure seemed to be successful in these workers' hands, but there are many technical difficulties. While it may be less expensive than

the rabbit test the difficulty of obtaining this species of fish, together with their high mortality, makes the test impractical.

In considering the subject of hygiene and management of pregnancy, marked improvement has been made as a result of prenatal care. Many clinical studies have been carried out; one of interest is the work of Galloway on the anemias of pregnancy. He has by diet and iron therapy improved the general condition of his patients, and has made blood and hemoglobin studies throughout the prenatal period. It seems at present that there is a mild form of anemia of pregnancy which responds well to the above treatment, and even disappears during the puerperium. There is also a severer grade of anemia somewhat akin to a pernicious anemia, the treatment of which has been unsatisfactory. Further work is necessary for clarification of this subject.

Increasing attention has been paid to diet during pregnancy with special reference to the vitamins and calcium metabolism. These accessories to the diet are necessary to avoid heavy drains on the maternal organism and to provide the growing fetus with basic nutritional substances. The vitamins essential for the obstetrical patient are the B complex containing the anti-neuritic factor; C, the anti-scorbutic factor; and D, the anti-rachitic factor. Guggisberg calls attention to the fact, with special reference to Vitamin D, that while fetal rickets is not an entity, yet a rachitic tendency of the newborn child could quickly develop if there were a maternal deficiency of this vitamin. Calcium metabolism is definitely interrelated with Vitamin D and may be easily and satisfactorily supplied in inorganic form by using calcium gluconate or calcium lactate; it may be supplied also in milk. Better results are obtained with calcium in organic combination; Sherman recommends one gram of calcium to 100 grams of protein in the diet. Vitamin D may be given with cod-liver oil or viosterol. The latter should preferably not be given without a sufficient quantity of calcium so as to protect the maternal organism from calcium withdrawal.

With reference to the so-called medical complications of pregnancy, there has been a reversal in point of view particularly with reference to such chronic diseases as organic heart disease, chronic nephritis, diabetes, and tubercu-

losis. At the present time, the disease is considered primary, the pregnancy secondary and, therefore, the pregnancy is regarded as the complication of the disease. With this idea in mind, treatment is made easier; the patient is treated for her medical disorder according to established principles of internal medicine, and the pregnancy is allowed to continue as long as it does not interfere with the patient's general health, comfort or outlook on the duration of her life. The individual management from an obstetrical standpoint is based upon the individual requirements of any given case; no set rules can be laid down. Taking heart disease as an example the patient should be given plenty of rest, appropriate medical treatment and the pregnancy disregarded. Cesarean section is not necessarily indicated because a patient has organic cardiac disease; in fact, modern statistics seem to prove that delivery through the natural channels is as good or even better than Cesarean section. However, each case must be individualized and treated on its merits. With reference to diabetes it may be said that any given case can be satisfactorily managed by diet and insulin, routine urine examinations for sugar, aiming to keep the patient's urine sugar free, and also free of acetone bodies. There is sometimes danger of coma from prolonged labor which should be treated accordingly.

Syphilis should be actively and energetically treated during pregnancy. In spite of the difficulty of obtaining negative serum reactions on the mother; the outlook for the fetus is excellent as McCord's statistics have repeatedly shown.

Toxemias of pregnancy are still with us; very little of positive value has been added. It has been shown experimentally and clinically that there might possibly be a posterior pituitary etiologic factor as the cause of certain types of eclampsia. Goodall believes for the present that the etiologic factor in toxemias may be inherent in placental lesions. Barker has called attention to a kind of toxemia associated with edema, rising blood pressure and a rising blood cholesterol. He maintains that some of these patients are in protein starvation and subsist on some of their own muscle protein reserves. Good results have been obtained in some cases by an allowance of liberal quantities of protein.

The field of endocrinology as regards preg-

nancy is obscure and confusing. At present, however, one phase of the subject seems promising. Cases of repeated habitual abortion in the absence of any other positive findings have been attributed to endocrine imbalance. If it is true that the corpus luteum hormone, known as progestin, prepares a suitable nidus for embedding of the ovum, and likewise a quiescence of the uterus early in pregnancy, it might be expected that its absence or sudden withdrawal might lead to abortion. Falls, Lackner and Krohn have recorded successful results with a preparation of progestin in a small series of cases. The results are promising but not altogether definite.

The induction of labor at term by rupture of the bag of waters has been tried and advocated by Slemmons, King, and Morton. They maintain that labor is actually shortened by this method. They call attention to the fact, also, that the membranes are not entirely necessary for cervical dilatation and in their series of cases no harm has resulted to the babies. This seems to be a useless unnecessary procedure unless especially indicated. There is also an added risk on account of possible infection. However, where necessary the method is valuable and in some cases oxytocics such as quinine or pituitrin in small doses may be added.

Important contributions have been made, notably by Thoms, Walton, Reinberger, and Caldwell and Moloy, on the x-ray diagnosis of disproportion and in the mechanism of labor. The latter authors have given us a reclassification of pelvic types and have proved by x-ray films made during the course of labor where the difficulty may lie, based on pelvic types. This work is very promising.

Definite progress has been made with reference to analgesia during labor. Various agents such as pento-barbital sodium (nembutal), the modified Gwathmey synergistic analgesia, and paraldehyde have been tried. Reed has reported a small series where tribromethonal (avertin) has been employed rectally. Galloway and Smith have reported upwards of 500 cases where nembutal has been used successfully without deleterious effects on either mother or child. Irving and his workers have tried several combinations of analgesia in upward of 800 cases, and they likewise favor nembutal. It seems at present

that the larger doses, 6 to 7.5 grains, must be used to obtain satisfactory analgesia and amnesia. Such patients, however, bear close watching. Avertin produces a reasonable amount of amnesia but is not suitable as a routine. The preparation is toxic to some patients and where used should be freshly prepared. Gwathmey substitutes small doses of nembutal for the magnesium sulphate of his original technic. He claims a high degree of success with this latter modification.

The ergot question has been re-investigated by Thompson, Moir, and Adair and Davis. These latter two investigators have isolated, with the aid of Kharasch, a chemist, what they believe to be a new active principle. Much debate centers about whether this is or is not an alkaloid. One such preparation, known commercially as ergotrate, is now available and may be given by mouth in doses of 1/320th of a grain, three times daily. The same preparation is also available for intravenous use. The uterine responses to this new active principle seem quite satisfactory and Adair feels that the ergot problem is now solved.

Much progress has been made in the care of and saving the lives of, premature babies. Intelligent nursing care, together with preservation of body heat by controlled incubators seem to contribute materially to this important problem. Many such babies previously without such care and modern armamentarium have been lost in the past. This modern contribution is a hopeful outlook.

In conclusion, I would say that nothing startling or phenomenal has occurred in the last five years, but progress has been definite and steady, although slow. Many improvements are recorded in maternal morbidity, mortality and in infant morbidity and mortality.

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RECTAL CAUSES OF CHRONIC CONSTIPATION

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No case of chronic constipation is diagnosed completely or should ever be treated as such, until a thorough proctologic examination has been made. The rectum, in many cases, is found distended with feces, the patient not experiencing

the slightest sensation of its presence and having no desire whatever for stool. This rectal stasis may be atonic in character, or it may have its origin in definite rectal lesions. If atonic, it usually has its onset early in life. Repeated and prolonged inattention to the calls of nature, such as indolence, absolute disregard, and even resistance obtund the nerves of the rectum so that they do not respond to stimulation.

Fecal Impaction. Rectal lesions, as a rule, are easily diagnosed by a thorough proctologic examination. This examination, by itself, is insufficient, and in many cases, will not determine positively that the constipation has its origin in rectal disease, because the identically same abnormality may cause chronic constipation in one individual and yet have no appreciable influence in retarding the excretion of feces in another. If repeated digital examinations of a patient who has been given neither medicines nor enemas reveal a large amount of feces in the rectum, this alone should cause us to be suspicious of a rectal stasis. If the rectum is found to be almost or quite empty, we should feel reasonably certain that the constipation is due to delay higher up; and yet, we should not overlook the possibility of the delay higher up having its origin in some rectal condition. In many cases, roentgenoscopy including fluoroscopic study of perhaps several barium meals, as they pass through the alimentary tract, is the only method by which we can determine definitely the type of constipation present. If rectal stasis is diagnosed, the presence or absence of rectal lesions is easily determined by a proctologic examination. Such a diagnosis enables us to assume a more positive attitude as to our ability to cure the constipation by correct treatment of the real etiologic factor.

In fecal impaction, rectal in type, there may be a constant desire to go to stool, with an inability on the part of the patient to evacuate the mass. The levator ani and sphincter muscles may be injured. As a result of frequent and long continued spasmodic contractions, they may become hypertrophied to such an extent as to be the cause of chronic constipation after the fecal impaction has been removed.

Foreign bodies in the rectum may cause obstipation, and the symptoms are practically the same as those of fecal impaction. The foreign bodies may have been swallowed, introduced into

the rectum by accident or for the purpose of concealment, or for the relief of certain symptoms.

Sphincteric Spasm. Ulcerations, acute or chronic, of the anorectal region frequently inhibit voluntary defecation from fear of pain produced in the act. The infected ulcerated surface of a diseased crypt, anal papilla, a fissure, a fistula or pruritus of the external skin excites tenesmic contractures of the sphincter muscles. The presence of feces in the rectum also excites frequent and prolonged contraction or spasms which cause actual obstruction. Many cases of constipation, the result of spasm or hypertrophy of the external sphincter muscle, are associated with hemorrhoids and the cure of the constipation following a hemorrhoidectomy is derived from the relaxation of this muscle rather than from the removal of the tumors. Hypertrophy of the circular muscle fibers of the bowel at the recto-sigmoid junction may also be a causative factor. This is a very rare condition, and is not easy to diagnose.

Houston's Valves. There has been and is now a great difference of opinion as to the role of abnormal rectal valves in causing constipation. Twenty-five years ago much was written on this subject, and the operation of cutting the valves became quite general. Because it was done in many cases in which the valves were not the cause of constipation and, therefore, no benefit resulted, the operation fell into disrepute. A violent controversy raged and many declared that these valves were never a cause of constipation, some maintaining that they were not true valves but only folds of mucosa. However, they are at times abnormally developed and they can and do become hypertrophied so that they may and do obstruct or impede the fecal current.

Inflammatory Masses. Hemorrhoids, both external and internal, may cause constipation, especially when they are inflamed or thrombosis has occurred in them. The real causative factor in such cases is the hypertrophy of the sphincter muscles, the result of constant irritation and spasm. Hemorrhoids may also attain such a size as to block or obstruct the anal canal.

Intra-intestinal tumors, such as polypi, adenomas, papillomas and fibromas, very seldom attain sufficient size to retard or obstruct the excretion of feces. I recall two cases in which constipation was the result of a rectum practically filled with

polypi. When complicating other rectal conditions, such as anorectal ulcerations or hemorrhoids, these intra-intestinal tumors must be reckoned as a possible etiologic factor in constipation. So long as polypi remain well up in the rectum, patients, as a rule, are not aware of their existence. When they prolapse they may cause sphincteric spasm and hypertrophy. Prolapse of the rectum, especially when the upper portion becomes invaginated into the lower and protrudes through the anus, may cause obstipation.

Stricture of the rectum, cicatricial or malignant, always causes more or less obstipation, and in the early stages this may be the only symptom, although later the sphincteric control is lost and there are frequent diarrheal movements containing blood and pus.

Prolapse of the rectum. This may be a prolapse of the redundant ampullar mucosa or intussusception of the sigmoid or rectum through the sphincters.

Infection of the mucosa as in proctitis, sigmoiditis or colitis.

Diverticulitis—the inflamed and fibrous mass obstructs the rectal lumen.

Extrarectal conditions, such as enlarged prostate, stone in the bladder, urethral stricture, uterine and ovarian tumors, uterine displacements, pelvic inflammatory diseases, perineal lacerations, rectocele and deformities of the coccyx are not infrequently the primary cause of the rectal type of chronic constipation.

Retroversion of the uterus, by its pressure on the rectum, may cause a partial obstruction of the fecal current, or by interfering with the normal muscular movements, diminish its expulsive force. The same is true of a heavy uterus or a large uterine fibroid, an impacted myoma, or an ovarian tumor growing between the leaves of the broad ligament and complicated by pelvic adhesions, so that it cannot move freely. Severe puerperal parametritis may involve the rectum to such an extent as to constrict its lumen even to complete occlusion.

Rectocele, as a rule associated with cystocele and prolapsus uteri, the result of extensive lacerations of the perineum involving the triangular ligament, rectovesical fascia and anterior portion of the levator ani muscle, may render defecation impossible without manual reduction of the prolapsed parts. Hemorrhoids and other

rectal conditions are not infrequently the result of these relaxed conditions, and tend to aggravate the constipation.

Gant reports two cases in which there was an orange-sized opening two inches above the anus, with a pouch which passed downward and backward, displacing the coccyx posteriorly; also two cases in which there was congenital absence of the coccyx, with bulging posteriorly of the lower rectum. Constipation was the result of these conditions. Sacrococcygeal tumors and deviations of the coccyx, especially when the lower segments are fixed and project inward at a right angle with the sacrum, may be the cause of delay in the excretion of feces.

Stone in the bladder, urethral diseases and enlarged prostate may produce sphincteric spasm, with subsequent hypertrophy and constipation.

Enemas are an excellent occasional resource and of undoubtable value in selected cases. In the majority of cases however, the daily routine of introducing large quantities of fluid, often irritating in character excites the sphincters to spasm.

In the treatment of chronic constipation, all of the conditions enumerated should be borne in mind and either discovered and corrected or ruled out. They can be discovered only by careful examination—digital, anoscopic, sigmoidoscopic or by careful physical and roentgen examination. It is to be regretted that many cases of constipation are daily treated without examination of the rectum and sigmoid. Physicians who would not think of treating sore throat, diseases of the chest, diseases of the female genitals, or, in fact, any other region of the body without careful examination all too frequently treat constipation by diet, laxatives and other methods without any examination to determine the cause of this symptom. It is the duty of physicians to call attention to this fact as often as possible until this situation is remedied.

A careful examination of this region will often reveal unsuspected lesions of much more serious import than the complaint for which the patient consults the physician. Many illustrative cases could be mentioned.

The following case is apropos: Mrs. W. case No. 2816, patient of Dr. O. Bourque had itching about the anus for the past year. Several months ago there was a "hemorrhoidal" protrusion. The tumor was injected with oil but within a few minutes she became quite faint, had severe anal pain, was taken

home and put to bed. A few days later she had a sharp rectal hemorrhage. Upon examination we now find a hard nodule mass stenosing the rectum two inches above the anus. The mass fills the retrorectal space and is firmly fixed to the uterus and pelvis. A biopsy reported scirrhous carcinoma.

58 E. Washington St.

TUBERCULOSIS IN THE ILLINOIS STATE PSYCHOPATHIC HOSPITALS

DICK CAUTHEN MCCOOL, M.D.,

Formerly Pathologist in Kankakee State Hospital

MEMPHIS, TENNESSEE

The purpose of this investigation was primarily two-fold; namely, to ascertain the incidence of pulmonary tuberculosis among the various groups or classifications of patients in the Illinois State Psychopathic Hospitals, and secondly, to interpret the significance of these findings in relation to the disease itself. In order to accomplish this, it was necessary to have certain detailed information from various sources. I wish to acknowledge my indebtedness to the Alienist, Dr. H. Douglas Singer, and to the State Hospitals whose courtesy and assistance have made this survey possible.

In order to pursue some definite plan of approach it was thought best to obtain our information by group incidence. Therefore, the groups or classifications of patients known through experience to be most often affected by pulmonary tuberculosis were chosen for the basis of investigation. These groups suggested themselves because of their tendency to mental and physical debility, and in this instance include precox, involutional melancholia, psychoneurosis, senile psychosis, manic depressive psychosis, and general paresis. Inasmuch as these groups comprise 73% of the entire Psychopathic Hospital population the few scattered cases in the remaining groups are sufficiently negligible not to affect the results materially.

Herewith is presented Chart 1, which shows the incidence among the various groups listed above:

It will be seen that dementia precox dominates the field, being approached only by involutional melancholia, the remaining groups following with about equal frequency. It must be stated that these figures are not absolutely conclusive for the reason that they are taken from

CHART I

Total Number Pts. in All	Totals by Groups	Tuberculous Patients	Group Incidence	Total Number T.B. Pts.	Approximate % for Entire Institu- tional Population
23878	Dem. Pre. 13273 Seniles 693 Gen. Par. 1502 Invol. Mel. 245 Psychoneu. 186	Dem. Pre. 531 Seniles 10 Gen. Par. 17 Invol. Mel. 8 Psychoneu. 3	Dem. Pre. 4% Seniles 1.5% Gen. Par. 1.1% Invol. Mel. 3.2% Psychoneu. 1.69%	584.	2.45%

known cases of pulmonary tuberculosis, and do not include cases which are incipient and therefore without objective symptoms. Due to the psychotic nature of the patients in these institutions there is little to aid one in the way of subjective symptoms or complaints as an aid in diagnosis of incipient cases, and it is this fact which tends to minimize the percentage of pulmonary tuberculosis actually present.

There is a total number of 584 known cases of pulmonary tuberculosis out of 23,878 patients, or a general incidence of 2.5%. This would be found extremely high if compared with a similar number of non-psychotic individuals, such as the health report of any ordinary city of 25,000 population would reveal. For instance, Kankakee whose population is 20,620 has an incidence of .00111 or 0.1%. It necessarily follows that psychoses predispose to the development and progress of the disease, and it is to the explanation of this fact that we next turn our attention.

The role of the psychoses as etiologic factors may best be considered in two aspects, physical and psychiatric. Physical aspects are essentially 1. a lack of personal hygiene and 2. general physical impoverishment. Despite highly efficient nursing care it is in many cases an impossible task to maintain cleanliness among mental patients, because so many are untidy or uncooperative or both. (The term "untidy" is used instead of "involuntary" in order to avoid confusion with rectal or bladder evacuations due to organic lesions or unconscious states.) Such patients soil themselves to extents no one ordinarily imagines who has not worked among them. It is not uncommon to find those patients who besmear themselves with feces, or even those who eat it. Likewise drooling saliva saturates their clothing in many instances. In a general way it may be seen how personal cleanliness cannot be maintained in a large percentage of cases.

As to general physical impoverishment, this

is best seen in the dementia precox group asthenia, poor posture, malnutrition, and intercurrent affections play important roles toward development and propagation of tuberculosis. The asthenia manifests itself as nervous, muscular, vascular, hemopoietic, and glandular, all of which systems are physiologically interfered with. Posture and malnutrition are largely determined by the individual psychotic reactions. That is, one may assume some weird, stooped or crouched position in response to a delusion and this position may seriously impair pulmonary excursion. Delusions may likewise explain malnutrition by preventing a patient from eating voluntarily, but most of the malnutrition results from inefficiency of digestive physiology due to the mental depression. Likewise maniacal excitement may produce malnutrition by being carried to the point of mental and physical exhaustion. The role of affections or illness is readily understood and needs no comment.

The psychiatric aspects consist of a withdrawal from reality with subsequent affect loss, or the failure to respond to ordinary emotional stimuli. This is accompanied generally by delusions and hallucinations and results in 1. a loss of interest in health, 2. a lack of cooperation in treatment, and 3. frequently inability to cooperate in treatment. Having lost interest in the world of reality these patients are not concerned with disease, treatment and other hardships of life, for their fancy world is free from such things. Consequently they are not interested in their health. Others may actively or passively refuse to cooperate due to a loss of interest or in response to hallucinations or delusions. In the third group are those cases who are too demented to cooperate in any measure.

The following chart indicates the high percentage of uncooperative and untidy patients on the Tuberculosis service at the Kankakee Illinois State Hospital. Clinical findings substantiate the fact that the incidence of tuberculosis is

greatest as a rule in the uncooperative cases, as shown by the figures given below.

CHART 2

No. of Patients	Cooperative	Uncooperative	Tidy	Untidy
67	16	51	46	21

Diagnosis is made in the usual manner but usually without the aid of early complaint, subjective symptoms, or cooperation. The routine physical examination of all new admissions uncovers most of the cases in view of the foregoing statement. Treatment is attempted along the usual lines both medical and surgical with results that depend largely upon the mental attitude of the individual patient, other factors being excluded.

The progress which tuberculosis makes in these psychopathic patients is best revealed by post-mortem findings, which bring out some interesting facts. First of all, the lesion in dementia precox patients is practically always diffuse and bilateral, and is usually ulcerative or ulcero-caseous in type. From the distribution and type of lesion found one can justly conclude that the process is fairly rapid and that it initiates very little, if any, tendency towards healing on the part of the tissues involved. Histologically there is relatively little fibroblastic proliferation, the picture being essentially that of caseous necrosis. Only in rare instances are there areas of calcification, and even then there is evidence that these are ancient rather than recent healed tubercles. The diffuse nature of the distribution, often suggesting miliary tuberculosis in appearance, is most likely the result of an impoverished resistance of the tissues, which is so characteristic in dementia precox patients, and the ulcerative process is of course due to secondary infection which has propagated luxuriantly for the same reason. Another feature of the pathology found in these cases is the great tendency to metastasis, which as a rule involves distant as well as proximal lymph glands, the intestinal tract (where it frequently forms ulcers), the visceral and parietal peritoneum, and the kidneys. In our own findings metastases have most frequently occurred in the above organs in order named, i. e. lymph glands, intestine, peritoneum, and kidneys.

Other pathologic findings at autopsy are the lack of a characteristic distribution or manifestation of the disease among the other psychotic groups, the rarity of metastases to the

brain or meninges, and the fact that the extent of the pathology resulting from tuberculosis is greatest in those cases in which the psychopathology is farthest advanced.

Conclusions to be drawn from the foregoing facts are:

1. Pulmonary tuberculosis is more prevalent in dementia precox than in any other psychosis.
2. The incidence of the disease is directly proportional to the degree of dementia present.
3. Emotional disturbance is a distinct contributory factor in the progress of pulmonary tuberculosis.
4. The pathogenesis and progress of the tuberculous process is due to an impoverished tissue resistance* which is most pronounced in the dementia precox group.
5. The extent of the pathology in tuberculosis of the psychotic patient is directly proportional to the integrity of the mental content and function.

*The term resistance in this instance implies resistance to infectious and other inflammatory processes. It does not include electrical resistance.

From the Department of Pathology of the Kankakee State Hospital, Kankakee, Illinois.

PREVENTION OF HYPOCHROMIC ANEMIA IN PREGNANCY

John C. Corrigan and Maurice B. Strauss, Boston (*Journal A. M. A.*, March 28, 1936), observed 200 normal pregnant women who presented themselves for routine care in the antepartum clinic when they were from three to seven months pregnant. Each patient was assigned a number in order. Blood for examination was withdrawn without stasis from an antecubital vein, and a careful dietary history was taken. Every woman was given a bottle containing 100 coated tablets, with instructions to take one tablet after each meal and to return the bottle and unused tablets at the next visit to the clinic. At all subsequent visits a fresh bottle or 100 tablets was given the patient. Unknown to her, the number of tablets remaining unused at each visit was counted and from these data the actual amount of medication taken was calculated. Patients who had been assigned odd numbers received tablets containing 0.2 Gm. (3 grains) of ferrous sulfate; patients with even numbers received tablets that were identical in appearance and size but contained lactose and no ferrous sulfate. Women who took less than one of the prescribed three tablets daily were excluded from the two series, as were also those in whom sepsis or hemorrhage developed, whether during gestation, parturition or the puerperium. The average daily intake of iron of the treated group was 0.5 Gm. (7½ grains) of ferrous sulfate. At each visit and again one week after parturition, venous blood was withdrawn for examination. Hemoglobin determinations were performed at monthly

intervals and one week after delivery by the Sahli method, with tubes so calibrated that 100 per cent was considered the equivalent of 15.6 Gm. of hemoglobin per hundred cubic centimeters of blood. Red blood cell counts were performed with pipets and counting chambers certified by the U. S. Bureau of Standards. Of the 100 women given no iron, twenty-four had less than 70 per cent hemoglobin post partum. Of the 100 women given iron, none had less than 70 per cent hemoglobin post partum. The conclusion is drawn that hypochromic anemia in pregnancy may be largely prevented by the routine administration of iron, especially in the latter months of gestation.

SUMMARY OF REGIONAL ILEITIS: REPORT OF CASE OF COLONIC INVOLVEMENT AND SUGGESTION OF NEW TERM

The case that A. J. Rosenblate, A. A. Goldsmith and A. A. Strauss, Chicago (*Journal A. M. A.*, May 23, 1936), report shows a typical clinical and roentgenologic picture of regional ileitis, with added involvement up to but not including the distal portion of the transverse colon. The patient had been previously treated for four years for subacute bacterial endocarditis (despite negative blood cultures) and renal disease. The picture of regional ileitis is that of dull pain in the right lower quadrant, low grade intermittent fever, slight diarrhea, anorexia, anemia and rapid pulse. Roentgenologic studies of the ileum reveal characteristic manifestations. In cases in which the pathologic condition extends to the colon, the authors suggest the term "ileocolitis ulcerosa chronica." The treatment of choice is surgery.

SURGICAL TREATMENT OF ANOMALIES OF UPPER URINARY TRACT IN CHILDREN

Fortunately, Meredith F. Campbell, New York (*Journal A. M. A.*, Jan. 18, 1936), declares, the majority of anomalies of the upper urinary tract are amenable to surgical treatment. Preoperative and postoperative surgical care in children demands the liberal administration of fluids, the free employment of blood transfusions and the prevention or combat of acidosis with dextrose. These considerations together with the conservation of body heat and a minimum of surgical trauma (sharp rather than blunt dissection, rigid hemostasis) will result in a surprisingly low mortality in radical surgery of the upper urinary tract even in extremely young children. Because children's kidneys, injured by obstruction, commonly show a remarkable restoration of function when afforded free drainage, conservative renal operations may be employed disproportionately more often in the young than in adults. Delayed diagnosis and a radical operation are usually reciprocal. Urologists are repeatedly impelled to perform nephrectomy for advanced hydronephrosis in children in whom recognition of the lesion two years earlier would doubtless have meant preservation of the organ. This is particularly and commonly true in ureteral obstruction by aberrant vessels or congenital stricture. In almost every case, open drop ether is the anesthesia of choice. Anomalies and their surgical treatment that the author

considers are (1) kidney: reduplication, abnormal mobility, polycystic, solitary cystic and horseshoe formation; (2) ureter: reduplication, abnormal insertion, ureterocele, ectopic opening, blind ending, stricture, kink, valves and vascular obstruction.

REVERSIBLE CARDIAC ENLARGEMENT

John E. Walker, Columbus, Ga. (*Journal A. M. A.*, May 23, 1936), asserts that there are three distinct conditions causing cardiac enlargement in which the heart returns to normal size after specific therapy. These conditions are arteriovenous aneurysm, beriberi and myxedema. It is of course doubtful whether these instances of cardiac enlargement have any bearing on the larger problem of cardiac involvement in hypertension. However, Christian found that only about two thirds of the cases of nonvalvular cardiac enlargement of middle age are related to present or past hypertension, and he states that there are many "unanswerable riddles" in discussing the relation of hypertension to cardiac enlargement. From this it may be inferred that cardiac enlargement in hypertension is not necessarily the benign compensatory process resulting from purely mechanical causes, as generally considered. Riesman and Davidson are strongly of the opinion that there is a nutritional factor in cardiac patients who have repeated attacks of decompensation. The metabolic origin of another cardiac disease, namely, coronary sclerosis, is a seriously considered hypothesis. Possibly along similar lines of investigation the future may demonstrate that the present conception of cardiac enlargement in hypertension as arising purely from mechanical factors is too naive. Roentgenograms depicting the striking return to normal size of enlarged hearts in arteriovenous aneurysm, beriberi and myxedema are given. These show that an enlarged heart is not always a permanent irreversible condition. The three diseases are readily amenable to specific treatment and they must be considered either as primary or as contributing factors in the differential diagnosis of all enlarged hearts.

EFFECT OF INJECTION OF BACTERIAL FILTRATE ON BROWN-PEARCE RABBIT EPITHELIOMA

W. T. Pommerenke, Rochester, N. Y. (*Journal A. M. A.*, May 9, 1936), points out that the employment of bacteria or their products in the treatment of malignant disease is not new. Because of obvious restrictions incidental to the use of human material, he made a study on animals, in the hope of gaining accurate experimental information on the mode of action and on the effects of similar bacterial filtrates. The Brown-Pearce rabbit epithelioma of the testicle was used in these experiments. Its genealogy and biologic behavior are well known. It is a highly malignant animal tumor which, unchecked, runs a rapidly fatal course in a large proportion of cases. The sterile filtrate of *Bacillus histolyticus* growing on the Brown-Pearce rabbit epithelioma was injected under a variety of experimental conditions into rabbits having the same type of tumor from which the filtrate was prepared.

Injections of this filtrate were found to have no apparent effect on the rate of growth of the tumor or on the microscopic appearance of the tissue. Even when the tumor was propagated through two generations of hosts, both of which had received injections of the bacterial filtrate before and after inoculation with the tumor, its highly malignant potentialities were not checked.

Book Reviews

DIABETIC LIFE. Its Control by Diet and Insulin. By R. D. Lawrence, M. D. Ninth Edition with 15 Illustrations. Philadelphia. P. Blakiston's Son & Co., Inc. 1936. Price \$3.00 net.

This work is a concise practical manual for practitioners and patients.

PASSIVE VASCULAR EXERCISES AND THE CONSERVATIVE MANAGEMENT OF OBLITERATIVE ARTERIAL DISEASES OF THE EXTREMITIES. By Louis G. Herrmann, M. D., with a Foreword by Mont R. Reid, M. D. Illustrated with 80 engravings and 4 colored plates. Philadelphia & London: J. B. Lippincott, 1936.

ANIMAL MICROLOGY. By Michael F. Guyer with a Chapter on Drawing by Elizabeth A. (Smith) Bean. Fourth Revised Edition. Chicago, Illinois. The University of Chicago Press. 1936. Price \$2.50.

Entirely revised and brought up-to-date, the fourth edition of this work treats of every recent improvement in microtechnique.

SYPHILIS AND ITS TREATMENT. By William A. Hinton, M. D. Boston. New York. The MacMillan Company. 1936. Price \$3.50.

This work is intended for physicians, medical students and public health workers, as well as for dermatologists and syphilologists. It is an entirely new presentation of the subject, embodying the most recent authoritative contributions to the study of syphilis.

DISEASES OF THE RESPIRATORY TRACT. Clinical Lectures of the Eighth Annual Graduate Fortnight of the New York Academy of Medicine. By 21 contributors. 418 pages with 56 illustrations. Philadelphia & London: W. B. Saunders Company, 1936. Cloth, \$5.50 net.

This work represents the latest knowledge of the subject of respiratory diseases. Twenty-one of the outstanding authors in this country have contributed to this volume.

CLINICAL HEART DISEASE. By Samuel A. Levine, M. D., F. A. C. P., Assistant Professor of Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton Hospital; Physician, New England Baptist Hospital, Boston. 445 pages with 97 illustrations. Philadelphia & London: W. B. Saunders Company, 1936. Cloth, \$5.50 net.

This book presents in a simple form the important

aspect of diagnosis, prognosis and treatment of heart disease. It should appeal to the general practitioner, and will be likewise found convenient to specialists.

THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION. Edited by Richard M. Hewitt, B. A., M. A., M. D., Lloyd G. Potter and A. B. Nevling, M. D. Volume XXVII (Papers of 1935—Published 1936). Octavo of 1353 pages with 256 illustrations. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$12.00 net.

The purpose of this work as has been the custom with previous volumes is and has been to produce a work which would be of value to the general practitioner, diagnostician and general surgeon.

INTERNATIONAL CLINICS. Volume II, Forty-six Series, 1936. Philadelphia, Montreal and London: J. B. Lippincott Company.

This work is edited by Lewis Hamman, M. D. It is a quarterly of illustrated Clinical lectures and especially prepared original articles on all phases of treatment of medicine, surgery and the various specialties including hygiene and other topics of interest by leading members of the medical profession throughout the world.

PRINCIPLES AND PRACTICE OF RECREATIONAL THERAPY FOR THE MENTALLY ILL. By John Eisele Davis, B. A., in Collaboration with Dr. William Rush Dunton, Jr. New York: A. S. Barnes and Company, Inc., 1936. Price \$3.00.

This book is the outcome of a large experience, the result of the collaboration of the physician who has done more than anyone else to develop the theory and practice of Resocializing Physical Therapy and a physical director with unusual spirit and skill and an understanding based on untiring and well-tried work with an unusually difficult type of patients and an able corps of helpers.

MEDICAL SCIENCE EXHIBITS A CENTURY OF PROGRESS. Chicago World's Fair, 1933 and 1934. By Eben J. Carey, M. D. Chicago, 1936.

This volume is dedicated to Rufus Cutler Dawes, President of A Century of Progress and of the Museum of Science and Industry, Chicago, and William Allen Pusey, Chicago, chairman of the medical advisory committee.

MINOR SURGERY. By Frederick Christopher, S. B., M. D., F. A. C. S., Associate Professor of Surgery at the Northwestern University Medical School, Chicago; Chief Surgeon at the Evanston (Ill.) Hospital. With a foreword by Allen B. Kanavel, M. D., F. A. C. S., Professor of Surgery at the Northwestern University Medical School. Third Edition, Reset. 1030 pages with 709 illustrations. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$10.00 net.

In this edition the author has included the new ma-

terial dealing with new methods for promoting wound healing, bacteriophage, resuscitation upon the operating table, de Takats method of ambulatory vein ligation, effort thrombosis, leech treatment of phlebitis, x-ray treatment of gas gangrene, bismuth injection treatment of warts, sodium morrhuate in cystic hygroma, "sprinter's fracture," lymphogranuloma inguinale, Elliott treatment of pelvic inflammatory disease, torus fractures, glomus tumors, iliopectineal bursitis, Leriche treatment of sprains, aspiration biopsy, Wangenstein stomach suction apparatus, etc.

SYNOPSIS OF DISEASES OF THE HEART AND ARTERIES.

By George R. Herrmann, M. D., with 88 text illustrations and 3 color plates. St. Louis: The C. V. Mosby Company, 1936. Price \$4.00.

This synopsis provides an acceptable indexed epitome of the principles and modern conceptions of cardio logic practice. It is not intended as a work for the specialist, but is intended primarily for the plodding students and the assiduous conscientious practitioner.

EXOPHTHALMIC GOITER AND ITS MEDICAL TREATMENT.

By Isreal Bram, M. D. Second Edition Completely Revised and Enlarged with 79 illustrations. St. Louis: The C. V. Mosby Company, 1936. Price \$6.00.

In this volume the author writes frankly from the point of view of one who believes that Graves' Disease is a malady that can be most successfully treated by medical, psychotherapeutic, and hygienic measures. He accepts the widely held conviction that the disorder is of constitutional etiology and emphasizes the necessary corollary that surgery or destructive radiation addressed to the thyroid gland can only serve as a palliative. Other circumstances being favorable—it may be admitted as a general principle—palliation may suffice for a large measure of practical success, but palliation is not cure.

ELGIN PAPERS COLLECTED AND CONTRIBUTED TOGETHER WITH VARIOUS NOTES AND COMMENTS. Volume II.

Published by the Elgin State Hospital. 1936.

The close relation of the mind and body and the interrelation of the hygiene of both is cited in this work.

Dr. Charles F. Read, managing officer, and Dr. John T. Nerancy, former acting clinical director of the hospital, are co-authors of the first of thirty collected and contributed papers on psychiatric matters with which the state department of public welfare has to deal.

After reviewing the classic procedures in treatment of mental illness, Drs. Read and Nerancy have to say that the matter of physical health affecting abnormal mental states is of growing importance to those who treat psychotic patients.

"The large intestine continues to be an object of grave suspicion," they said. "Tonsils, teeth and prostate must be kept constantly in mind as a search for obscure cause for mental sickness is made." They cite the endocrine glands as of importance also.

"The future of modern state hospital treatment is an interesting field for speculation, especially in view of

the past, which presents so many by-paths leading into the swamps of disillusionment," the co-authors declared. "We look more hopefully to the work with living tissues and to those who survey the advances of physiologic chemistry with inspired discernment.

"Especially does there seem to be some hope in the study of the colloids, the chemistry of films, surfaces and interfaces."

Society Proceedings

HENRY COUNTY

Dr. H. N. Herlin, Kewanee, was named president of the Henry County Medical Society at meeting here Thursday. Others named to office are:

Vice-President—Dr. Worley R. Young of Geneseo.

Secretary-Treasurer—Dr. P. J. McDermott.

Delegate to State Convention in Springfield May 19, 20, 21—Dr. McDermott.

Alternate—Dr. G. H. Hoffman.

Tri-county meeting of Medical Society will be held in Kewanee in the fall of this year. This includes Knox, Henry and Warren Counties.

Speakers at the meeting last night, which followed dinner in Parkside Hotel, were Dr. A. C. Ivy and Dr. R. W. McNealy, who gave interesting talks and showed stereopticon slides to illustrate their topics.

Fifty persons attended the meeting, Peoria, Ohio, Princeton, Wyanet, Wyoming, New Windsor, and other towns being represented.

The members voted to endorse the Red Cross movement of establishing first aid units at oil stations throughout the county.

Resolutions of condolences were passed in the deaths of Dr. Matilda Eaton of Cambridge and Dr. W. E. Washburn of Kewanee.

KANKAKEE COUNTY

The physicians of the Kankakee County Medical Society and their wives were guests of Dr. Ralph Hinton, Managing Officer of the Manteno State Hospital, and Mrs. Hinton at a 6:30 o'clock dinner on the evening of May 14.

The regular monthly meeting of the society was held at 8:00 P. M. in the new Manteno State Hospital Building. During the evening the wives were entertained at bridge by Mrs. Hinton.

Dr. Paul H. Holinger, Assistant Professor of Otolaryngology of the University of Illinois, gave an illustrated lecture on "Bronchoscopy." Dr. D. R. Hanley of the Manteno State Hospital discussed the diagnosis of carcinoma of the esophagus by the use of the X-ray. Dr. E. J. Bomze, also of the Manteno State Hospital, presented and discussed the surgical treatment of an unusual case of uterine and rectal prolapse.

The Manteno State Hospital, located at Manteno, Illinois, now has 2,840 nervous and mental patients and the plans are to enlarge the institution to a capacity of 6,300 patients.

C. A. Perrodin, Secretary.

Marriages

HERMAN G. EICHHORN, Peoria, Ill., to Mrs. Mary McMeehan Choate of Carthage, March 28.

JOHN B. HAEERLIN, JR., Chicago, to Miss Clare Rogerson of Montreal, Que., Canada.

Personals

Dr. G. Howard Gowen has been appointed assistant epidemiologist to the state department of health, effective July 1.

Dr. Richard H. Jaffé, Chicago, discussed "Precancerous Lesions" before the Peoria City Medical Society, June 16.

Dr. George D. Hauberg, Moline, was chosen president of the Iowa-Illinois Medical Association at its annual meeting in Davenport, May 26.

Dr. John R. Caulk, St. Louis, addressed the Macoupin County Medical Society in May on "Obstruction at the Bladder Neck in Men, Women and Children."

Dr. Aaron Arkin, Chicago, addressed the Peoria City Medical Society, May 26, on "Differential Diagnosis of Organic Heart Disease."

Dr. Frank H. Ewerhardt, St. Louis, discussed "Fever Therapy" before the Adams County Medical Society in Quincy, May 11.

Dr. Samuel P. Colehour has resigned as city health officer of Mount Carroll, and Dr. Lawrence Isenhardt has been named to succeed him.

At a meeting of the Muskegon County Medical Society, May 22, Dr. Oscar B. Nugent, Chicago, spoke on "Diseases of the Eye in Relation to General Medicine."

Dr. Walter S. Swan, Harrisburg, was elected to honorary membership in the Saline County Medical Society at a celebration, April 15, in honor of his eighty-second birthday.

Dr. Clara Jacobson addressed the Chicago Council of Medical Women, June 5, on "Sedimentation Tests in Health and Disease."

Dr. Howard L. Alt, Chicago, addressed the Marion County Medical Society at Centralia, May 27, on "Use of Blood Chemistry in the Diagnosis and Treatment of Disease."

At a joint meeting of the East St. Louis and Belleville branches of the St. Clair County Medical Society, June 4, Dr. Joseph Edgar Stewart, St. Louis, read a paper on fractures.

The Vermilion County Medical Society was addressed, May 5, by Dr. James H. Hutton, Chicago, on treatment of hypertension and dia-

betes by x-rays.

Dr. Winston H. Tucker, Springfield, addressed the thirty-seventh annual meeting of the Sangamon County Medical Society in Springfield, June 4, on "Diagnosis and Treatment of Poliomyelitis."

At a meeting of the Chicago Club for the Study of Arthritis, June 3, Drs. Eugene F. Traut and Emil G. Vrtiak presented a "Statistical Study of Allergy in Arthritis," and Edwin P. Jordan, "Pathology of Rheumatoid Arthritis."

Dr. Walter W. Hamburger, whose resignation as assistant clinical professor of medicine at Rush Medical College was recently announced, will remain at the Department of Medicine, University of Chicago, as clinical professor of medicine.

Dr. Max Thorek will address the staff of St. Francis Hospital, Indianapolis, Indiana, on Thursday, May 28th on "Electrosurgical Obliteration of the Gallbladder."

The American Embassy of Mexico announces that Doctors Charles Mayo and Max Thorek were made Academicians of the Mexican Academy of Surgery.

News Notes

—The Kentucky State Medical Association meets in Paducah, October 5, 6, 7, and 8. Illinois doctors are cordially invited. Those wishing further information should communicate with E. L. Henderson, M. D., Chairman of Program Committee, 532 Main St., Louisville, Ky.

—Speakers before the Chicago Society of Internal Medicine, May 25, included Drs. Andrew C. Ivy on "Humoral Transmission of Nerve Impulses" and Joseph L. Miller, "Amebiasis, with Especial Attention to the High Incidence of Carriers."

—The Chicago Lying-In Hospital wishes several cases of eclampsia for study and for a motion picture. Physicians who have worthy indigent patients in this condition are asked to notify the hospital, Plaza 7200. The patients will be sent for and there will be no charge of any kind.

—The Chicago Orthopedic Society was addressed, May 22, by Drs. Géza de Takáts on "Reflex Dystrophy of the Extremities"; Arthur

Krida, New York, "Synovectomy" and "Crucial Ligament Repair," and Leo Mayer, New York, "Tendon Surgery."

—At a meeting of the Chicago Ophthalmological Society, May 25, Dr. James E. Lebensohn read a paper entitled "Concerning Certain Commercial Aspects of the Spectacle Industry," and Dr. Elias Selinger, "Retinal Angiospasm."

—At a meeting of the Chicago Society of Allergy, May 18, Drs. Ralph H. Scull and Francis L. Foran discussed "Hypersensitiveness in Chronic Flexural Eczema: A Study of Fifty-Five Cases"; Townsend B. Friedman, "Allergy in Children," and Leon Unger, "Asthma in Children: Results of Treatment."

—Walter J. Meek, Ph. D., department of physiology, University of Wisconsin School of Medicine, Madison, delivered the third annual lecture under the Arno B. Luckhardt Lectureship at the University of Chicago, May 21. His lecture was entitled "A Present Day Concept of Shock." The lectureship was established in the medical school by the Delta chapter of Phi Beta Pi.

—The Chicago Neurological Society was addressed, May 21, by Drs. Leroy H. Sloan and Abraham S. Freedberg on "Epileptiform Manifestations with Hypersensitivity of the Carotid Sinuses"; Theodore T. Stone and Eugene I. Falstein, "Huntington's Chorea," and Samuel B. Broder, "Sleep Induced by Sodium Amytal: An Abridged Method for Use in Mental Illness."

—According to the state department of health, seventeen new cases of small pox were reported in Will County during the week ended June 1. Three cases were reported in Whiteside County. The twenty new cases during this week compare with four for the corresponding week last year, while 251 cases have been reported for this year against thirty-six for the similar period of 1935.

—At a meeting of the Henry County Medical Society in Kewanee, May 14, Drs. Andrew C. Ivy and Raymond W. McNealy, Chicago, discussed "Therapy of Biliary Tract Disease from the Viewpoint of Applied Physiology" and "Surgical Management of Biliary Tract Disease" respectively.

—The annual banquet of the Chicago Medical Society with the installation of officers took place June 17. Dr. Julius H. Hess, retiring president, made a brief address and installed Dr. Thomas P. Foley as president. The president-

elect is Dr. George W. Post. On behalf of the society Dr. Charles H. Phifer presented Dr. Hess with a fine camera. The entertainment included an amateur night at which all the performers were either physicians or members of the families of physicians.

—The Institute of Medicine of Chicago announces that the time limit for submission of manuscripts for the Joseph A. Capps Prize is December 31. The \$500 prize will be awarded for meritorious investigation in medicine or in the specialties of medicine; the investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem. Competition is open to graduates of Chicago medical schools who have received the degree of doctor of medicine during the year 1934 or thereafter. Manuscript should be submitted to the secretary of the Institute of Medicine of Chicago, 122 South Michigan Avenue.

—At the annual faculty alumni dinner at Rush Medical College, June 16, announcement was made by Vice President Frederic Woodward for the university that the School of Medicine of the Division of Biological Sciences at the University of Chicago and Rush Medical College are now combined in one institution to be known as the Rush Medical College of the University of Chicago. Undergraduate medical education will be continued at the west side school. The medical schools are united in one departmental organization under the dean of the biological sciences. On the west side Dr. Emmet B. Bay will be associate dean. It is proposed within the next five years to diminish the number of medical students greatly and to introduce graduate instruction on an increasing scale into the curriculum with the possibility that eventually graduate study will supersede undergraduate study entirely on the west side. An ovation was tendered to Dr. Ernest E. Irons, who retires as dean to assume the title of professor of medicine. He will remain as chairman of the department of medicine. In his address Dr. Irons pointed out that 1937 will mark the centennial of the charter of Rush Medical College and it is proposed to celebrate the occasion fittingly at the time of the 1937 convocation. A committee was appointed to draw up plans for the celebration of the centennial with Dr. Robert H. Herbst as chairman.

Deaths

VICTOR A. BERGERON, Kankakee, Ill.; Northwestern University Medical School, Chicago, 1877; retired, aged 82; died, May 6.

JOHN JOSEPH BONA, Chicago; Chicago College of Medicine and Surgery, 1915; member of the Illinois State Medical Society; fellow of the American College of Surgeons; clinical instructor in surgery, Loyola University School of Medicine; age 43; on the staff of the Hospital of St. Anthony de Padua, where he died, April 25, of pneumonia.

WILLIAM LANE BUHRMAN, Chicago; University of Illinois College of Medicine, Chicago, 1923; a Fellow, A. M. A.; clinical instructor in pediatrics at Rush Medical College; on staff of the Presbyterian and Chicago Memorial hospitals; aged 39; died, June 10, of coronary thrombosis.

LEWIS J. DAY, Chicago; Chicago College of Medicine and Surgery, 1910; aged 65; died at Sugar Creek, Wis., May 31, of heart disease.

ANNA DWYER, Chicago; Northwestern University Women's Medical School, Chicago, 1896; a member of Illinois State Medical Society; former president of staff of Mary Thompson hospital; for several years medical examiner for the public schools; 17 years physician to the municipal courts; on staff of municipal tuberculosis sanitarium till recently; aged 63; died in Columbus hospital, June 10, of cerebral hemorrhage.

ARTHUR ROBIN EDWARDS, Boston; Northwestern University Medical School, 1891; a Fellow, A. M. A.; professor of principles and practice of medicine and clinical medicine, 1897-1917, and later dean, Northwestern University Medical School; member of the Illinois State Medical Society and the Association of American Physicians; was attending physician to the Cook County, Mercy, Michael Reese, Wesley and St. Luke's hospitals, Chicago; author of a textbook, "Principles and Practice of Medicine"; aged 68; died, May 17.

EMANUEL BERNARD FINK, Chicago; Rush Medical College, Chicago, 1920; a Fellow, A. M. A.; aged 46; committed suicide by hanging, June 16.

CLIFTON HORACE FRIZELLE, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 67; died, March 23, in Elgin, Ill., of arteriosclerosis.

CHARLES NEWTON GARTIN, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1912; aged 45; was accidentally drowned near Gary, Indiana, June 14.

RALPH L. GORDON, Lawrenceville, Ill.; St. Louis College of Physicians and Surgeons, 1900; member of the Illinois State Medical Society; aged 59; died, March 6, of chronic nephritis.

GEORGE F. GREENLEAF, Chicago; University of Michigan, 1899; aged 61; died, May 30, of cerebral hemorrhage.

HENRY P. HART, Chicago; Rush Medical College, Chicago, 1891; aged 71; died, March 21, of chronic myocarditis.

ARTHUR P. HUNNEMANN, Chicago; Harvey Medical

College, Chicago, 1903; assistant surgeon at the Illinois Eye and Ear Infirmary; aged 66; died, May 20, of carcinoma of the bladder and intestines.

JOSEPH A. LUCAS, Sullivan, Ill.; St. Louis College of Physicians and Surgeons, 1899; aged 72; died, May 18, of heart disease.

JOHN BATES LYON, River Forest, Ill.; Rush Medical College, Chicago, 1901; member of staff of Garfield Park hospital; aged 56; died, April 24.

FRANKLIN KYLE MARTIN, Havana, Ill.; Eclectic Medical College, Cincinnati, 1882; a member of Illinois State Medical Society; practitioner in Havana over 30 years; aged 74; died in the Methodist hospital in Peoria, May 17.

CHARLES L. MOELLER, East St. Louis, Ill.; Missouri Medical College, St. Louis, 1887; aged 72; died, February 29, of cerebral hemorrhage.

HERMAN REINISCH, Chicago; Chicago College of Medicine and Surgery, 1912; a Fellow, A. M. A.; on staff and former president of St. Francis hospital, Evanston; in war an officer of evacuation hospital 32 in France; aged 48; died suddenly, June 14, of coronary thrombosis, while making his hospital rounds.

EMETT LUCIEN SIVER, Chicago; Fort Wayne (Ind.) College of Medicine, 1884; aged 76; died, March 6, of carcinoma of the urinary bladder.

FRANK A. STAHL, Chicago; Rush Medical College, 1887; a Fellow, A. M. A.; died, June 10, aged 73, of cerebral hemorrhage. Dr. Stahl was for some years a demonstrator of obstetrics in Rush Medical College and contributed many articles on obstetrics and gynecology to medical literature. In recent years he devoted much time to the study of the cytology of the blood, embryology and the etiology of cancer and sarcoma, publishing several elaborate brochures privately.

ORA FRANCIS THOMAS, Chillicothe, Ill.; Northwestern University Medical School, Chicago, 1878; a practitioner for 57 years; son of Dr. Joseph Thomas, a veteran of the Civil War; aged 81; died, May 27.

WILLIAM LOWELL THURMAN, Chicago; Meharry Medical College, Nashville, Tenn., 1920; aged 53; died, February 14, in the Provident Hospital, of acute suppurative sinusitis and cervical cellulitis.

WILLIAM E. WASHBURN, Kewanee, Ill.; Hospital College of Medicine, Louisville, 1899; a Fellow, A. M. A.; aged 65; died, April 27, of pneumonia, in Kewanee public hospital.

FREDERICK J. WELD, Rockford, Ill.; Rush Medical College, Chicago, 1884; a Fellow, A. M. A.; aged 76; died, May 24.

SIMON LEO WISSIG, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 62; died, March 21, of chronic myocarditis.

HERBERT BOOTH WOODWARD, Hinsdale, Ill.; Hahnemann Medical School and Hospital, Chicago, 1897; practitioner in Hinsdale and Chicago; served overseas with Base Hospital No. 12; aged 65, died, in Hinsdale sanitarium, of thrombosis.

DIARRHEA

"the commonest ailment of infants in the summer months"

(HOLT AND MCINTOSH: HOLT'S DISEASES OF INFANCY AND CHILDHOOD, 1933)

One of the outstanding features of DEXTRI-MALTOSE is that it is almost unanimously preferred as the carbohydrate in the management of infantile diarrhea.

In diarrhea, "The sugar is added gradually, the most satisfactory carbohydrate for routine use is Mead's dextrin-maltose No. 1."—F. R. Taylor: "Summer Complaints," Southern Med. & Surg., pp. 555-559, August, 1927.

In diarrhea, "Carbohydrates, in the form of dextrin-maltose, well cooked cereals or rice, usually can be handled without trouble."—B. B. Jones: "A discussion of some of the commoner types of infantile diarrhea, and the principles of the diets used in their treatment," Monthly, 66: 411-412, 1932.

"The most desirable sugar is dextrin-maltose because of all the sugars maltose is least apt to cause fermentation."—A. J. Blau: The use of protein milk, 119-359, April 2, 1932.

Concerning the treatment of diarrhea, "If the weight remains stationary, it is an indication that loss of substance is occurring through the stools. To equalize this loss of substance, the diet must be increased, mostly in such a way as to avoid causing fermentation. This may be done by adding dextrin-maltose and preparations of protein to the food, increasing the calories until the infant is taking 160 calories per kilo, of body weight."—H. L. Rathoff: Nutritional disturbances, Arch. Pediat., 41: 771-772, Nov., 1924.

"The use of dextrin-maltose in the treatment of diarrhea is well indicated. It is a food containing 12 calories to the ounce, and is easily digested. The great advantage of being able to safely add a carbohydrate like Dextrin-Maltose No. 1 or No. 2 to the protein milk within a few days, enables one to gradually bring the infant up to its basal need for carbohydrate additions were advised. The result that many children on a diet of protein milk, was of great periods without adding carbohydrate of the stools, carbohydrate must be given milk within a reasonable time."—G. J. Feldstein: The use of protein milk in the treatment of infants and children, Arch. Pediat., 41: 771-772, Nov., 1924.

"In cases of malnutrition and indigestion, the appetite improves rapidly, and the stools soon become normal in appearance. By this I refer to the intelligent use of dextrin and maltose. When proper proportions of dextrin and maltose are used, there is a tendency to looseness."—V. Ladd: Fermentation known as "dextrin-maltose," J. Pediat., 1: 10-11, July, 1916.

"After the preliminary short period of starvation, protein milk should be used. . . . When the maltose has been sufficiently checked, dextrin-maltose may be added and gradually increased until from 4 to 6 tablespoons are being used."—W. L. Denney: Acute nutritional disturbances of infancy, Univ. West. Ontario M. J., 2: 132-137, April, 1932.

"Milk-sugar, which has been so extensively used in the past, should never be used where there is any digestive disturbance. It is not as easily digested as either cane-sugar (granulated sugar) or dextrin-maltose. The latter is the best of all or dextrin-maltose. There is any tendency to looseness of the bowels."—A. Brown: The Normal Child; Its Care and Feeding, F. D. Goodchild Company, Toronto, 1923, p. 120.

Just as DEXTRI-MALTOSE is a carbohydrate modifier of choice, so is CASEC (calcium caseinate) an accepted protein modifier. Casec is of special value for (1) colic and loose green stools in breast-fed infants, (2) fermentative diarrhea in bottle-fed infants, (3) prematures, (4) marasmus, (5) celiac disease. MEAD JOHN-SON & CO., EVANSVILLE, IND., U. S. A.

Regarding the treatment of diarrhea, "In our experience, the most satisfactory carbohydrate for routine use is Mead's dextrin-maltose No. 1."—F. R. Taylor: "Summer Complaints," Southern Med. & Surg., pp. 555-559, August, 1927.

SERIOUSNESS OF DIARRHEA

There is a widespread opinion that, thanks to improved sanitation, infantile diarrhea is no longer of serious aspect. But Holt and McIntosh declare that diarrhea "is still a problem of the foremost importance, producing a number of deaths each year. . . ." Because dehydration is so often an insidious development even in mild cases, prompt and effective treatment is vital. Little states (Canad. Med. A. J. 13: 803, 1923), "There are cases on record where death has taken place within 24 hours of the time of onset of the first symptoms."

"It should be remembered that a large percentage of sugar is better tolerated by dextrin-maltose, such as Mead's No. 1, than by cane-sugar. The possibility of where the maltose is only slightly in excess of dextrin, thus diminishing the possibility of excessive fermentation."—W. J. Pearson: The use of protein milk in the treatment of infants and children, Arch. Pediat., 41: 771-772, Nov., 1924.

"I begin to add carbohydrates slowly, by replacing 1/4 ounce Casec every two days with 1/4 ounce of Dextrin-Maltose, preferably Dextrin-Maltose Number one. As a rule, this is tolerated. When one ounce of Dextrin-Maltose is used, the Casec, of course, should be discontinued."—W. L. Reed: The etiology and treatment of infantile diarrhea, Arch. Pediat., 42: 743-760, Nov., 1925.

"When sugar causes diarrhoea one can change the form of it. Mead's Dextrin-maltose in small doses is more quickly absorbed and so superior to castor [cane] sugar. Lactose is expensive and seems not to be better than castor sugar."—H. B. Gladstone: Infant Feeding and Nutrition, 1923, p. 120.

"Milk-sugar, which has been so extensively used in the past, should never be used where there is any digestive disturbance. It is not as easily digested as either cane-sugar (granulated sugar) or dextrin-maltose. The latter is the best of all or dextrin-maltose. There is any tendency to looseness of the bowels."—A. Brown: The Normal Child; Its Care and Feeding, F. D. Goodchild Company, Toronto, 1923, p. 120.

In cases of diarrhea, "For the first day or so no sugar should be added to the milk. If the bowel movements improve carbohydrates may be added. This should be the one that is most easily assimilated, so dextrin-maltose is the carbohydrate of choice."—W. H. McCaslan: Summer diarrheas of infants and young children, J. M. A. Alabama, 1: 278-282, Jan., 1932.

"There is any tendency to sugar fermentation with a preparation with a high dextrin and relatively low maltose content, as Mead's dextrin-maltose. . . . It is desired to feed an unusually large amount of sugar to a baby, it is well to use a maltose-dextrin preparation, as in this way there is less danger of bringing about sugar fermentation than if lactose were used."—L. W. Hill: Practical Infant Feeding, W. B. Saunders Co., Phila., 1922, p. 200.

"The young baby, usually one-third milk and two-thirds dextrin-maltose, as the carbohydrate, is easily digested. . . . Preparations containing more maltose are more rapidly absorbed, but the more maltose are more liable to produce diarrhea. . . . Lactose which was very popular a time, is never used in our work. Sugar is often of opinion seems to be that milk sugar is often a source of indigestion in normal infants and the primary cause of fermentative dyspepsias in infants."—J. H. Reading, Jr.: Artificial feeding of infants during the first year, J. Pediat., 4: 1-10, April, 1923.

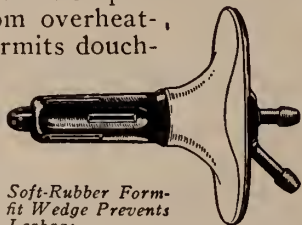
"Protein milk may be continued for several weeks when a gradual transition to a whole milk or evaporated milk formula, which will supply about one and one-half to two ounces of whole milk to every pound of body weight, is reached. This also amounts to five to seven per cent. of dextrin-maltose."—R. A. Strong: Summer diarrheas in infancy and early childhood, Arch. Pediat., 47: 344-354, June, 1930.

"The use of dextrin-maltose in the treatment of diarrhea is well indicated. It is a food containing 12 calories to the ounce, and is easily digested. The great advantage of being able to safely add a carbohydrate like Dextrin-Maltose No. 1 or No. 2 to the protein milk within a few days, enables one to gradually bring the infant up to its basal need for carbohydrate additions were advised. The result that many children on a diet of protein milk, was of great periods without adding carbohydrate of the stools, carbohydrate must be given milk within a reasonable time."—G. J. Feldstein: The use of protein milk in the treatment of infants and children, Arch. Pediat., 41: 771-772, Nov., 1924.

"In cases of malnutrition and indigestion, the appetite improves rapidly, and the stools soon become normal in appearance. By this I refer to the intelligent use of dextrin and maltose. When proper proportions of dextrin and maltose are used, there is a tendency to looseness."—V. Ladd: Fermentation known as "dextrin-maltose," J. Pediat., 1: 10-11, July, 1916.

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RELIEF FOR ANGINA PECTORIS

Quick relief for angina pectoris has been achieved by the simple inhalation of the chloroform-like drug called trichlorethylene, Dr. John C. Krantz, Jr., of the University of Maryland School of Medicine, Baltimore, reported to the meeting of the American Association for the Advancement of Science.

Patients with the fear of death upon them, dreading the next seemingly inevitable attack of the excruciating heart pain, get relief in a second from inhalation when the attacks occur.

As a routine treatment night and morning, crushing an ampule in a handkerchief makes attacks less frequent by a half or third. Clinical tests made by Dr. William Love, Jr., Baltimore physician, were successful in 15 out of 20 cases.

WE WONDER! HOW BAD IS STATE MEDICINE?

Since we are told socialism is inevitable, let us speed the day.

Likewise with Death—Inevitable. Yet we do not hurry on our way.

Pretty Nurse—"I'm going off duty now. Anything I can do to make you comfortable?"

Nervy Patient—"Sure, you can give me a good-night kiss before you go."

Pretty Nurse—"I'll call the orderly. He attends to all the dirty jobs."

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FRACTURES AND TRAUMATIC SURGERY—Informal Practical Course; Intensive Ten Day Course starting July 13th and October 12th.

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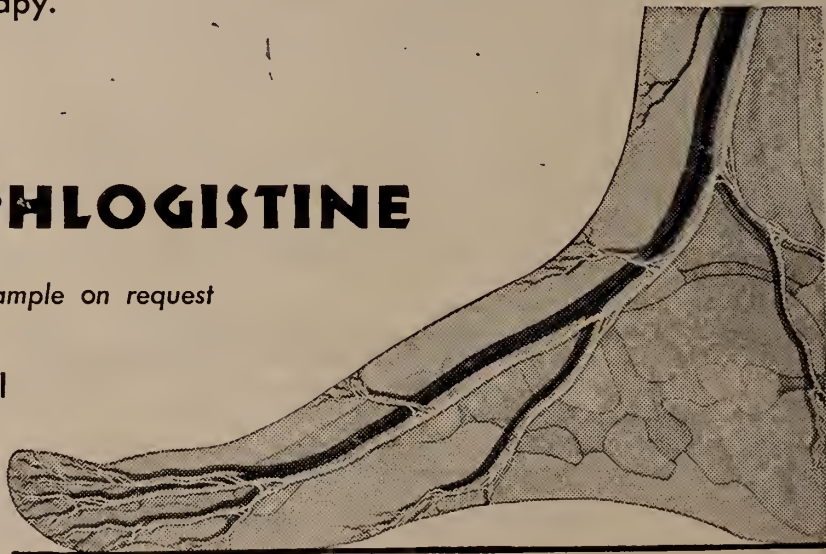
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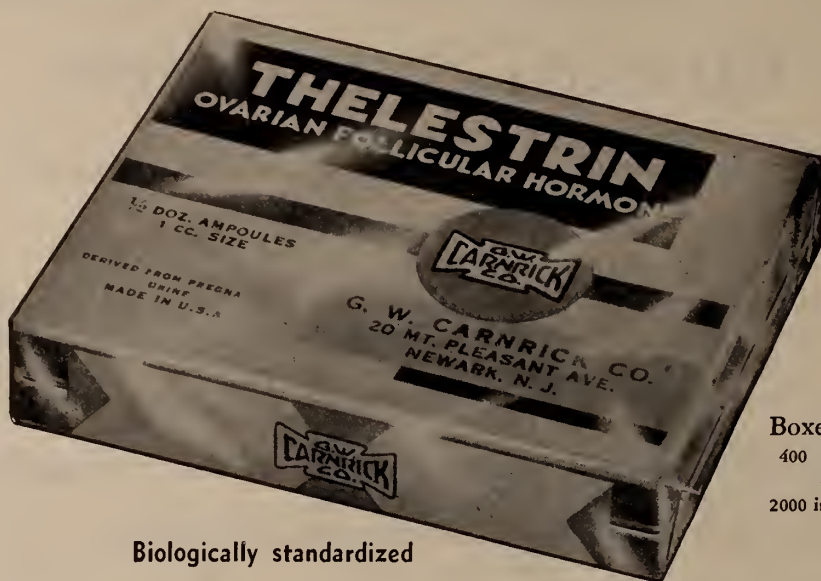
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Traffic fatalities totaled 37,000, a new all time record, the report said. Motor vehicle accidents also permanently disabled 105,000 persons and temporarily disabled 1,180,000 others during the year.

The second largest block of accidental deaths occurred in homes, where 31,500 persons were killed and 140,000 permanently disabled, the report said. Public accidents, including drownings, burns, firearms, mishaps, and others, took 18,000 lives. Deaths in occupational accidents totaled 16,500.

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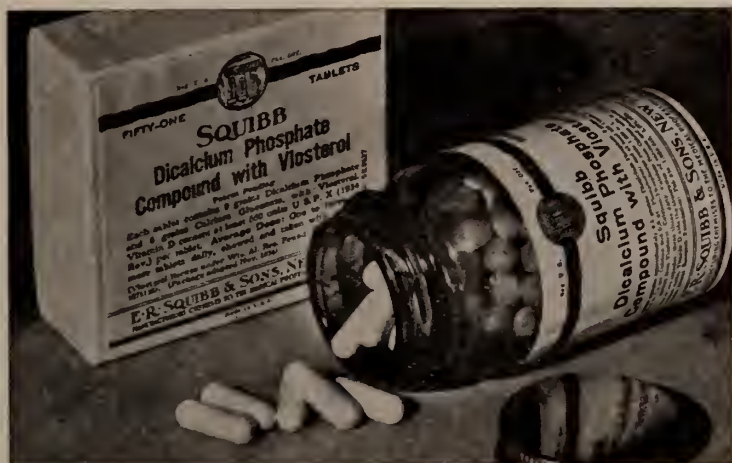
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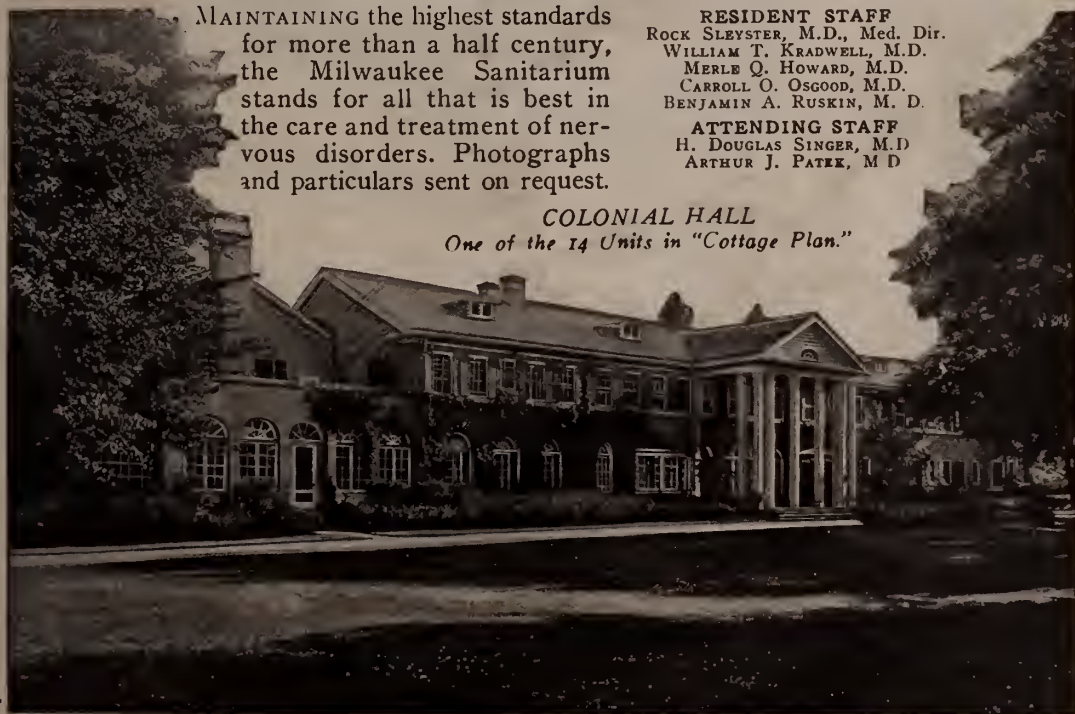
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VITAMINS IN CANNED FOODS

I. VITAMIN C

• The history of scurvy is as old as the history of exploration and conquest. Its ravages among early explorers and invaders are recorded in the oldest pages of history, due principally to the fact that during extended sea voyages or treks by land, dependence had necessarily been placed almost entirely on foods preserved by the crude methods of the day.

Scurvy was the first vitamin deficiency disease to be controlled by dietary management. In 1757, Lind recognized the fact that some substance in foods exerted a specific protective action against scurvy (1). As early as 1804, the daily lime juice ration became compulsory in the British Navy (2).

However, it remained for modern biochemical science to establish the chemical identity of this antiscorbutic factor. Vitamin C is now known to be identical with cevitamic acid (levo-ascorbic acid) and is as yet the only vitamin to be synthesized in the laboratory (3).

There would appear to be no valid reason why scurvy should ever constitute a serious threat to the health of the average American

infant or adult. Development of refrigerated transportation for raw foods and improvements in modern methods of food preservation, specifically canning methods, make available to the consumer during the entire year a large variety of foods possessed of valuable vitamin C contents. In addition, the modern trend towards education of the layman, in regard to the vitamin C requirements of both the infant and the adult, should also assist in complete eradication of infantile and adult scurvy from America.

Many canned foods are to be valued as contributors of vitamin C. Nutritional research has indicated that canned products such as the citrus fruits or citrus fruit juices (4), the more common fruits (5), and vegetables or vegetable juices, are important sources of the antiscorbutic factor (6). Modern canning procedures afford a good degree of protection to this labile vitamin, with the result that the canned food can be relied upon to supply amounts of vitamin C to the diet consistent with the amounts of the vitamin originally contained in the raw food from which it was prepared.

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(1) Vitamins: A Survey of Present Knowledge. Page 187. Medical Research Council, Special Report 167. 1932. His Majesty's Stationery Office, London.

(2) Vitamins in Theory and Practice, Page 86. L. J. Harris, 1935. Macmillan, New York.

(3) 1933 J. Chem. Soc. 136, 1419.

(4) 1930 J. Home Econ. 22, 588.

(5) 1935 Amer. Jour. Pub. Health, 25, 1340.

(6) 1933 Ind. Eng. Chem. 25, 682.

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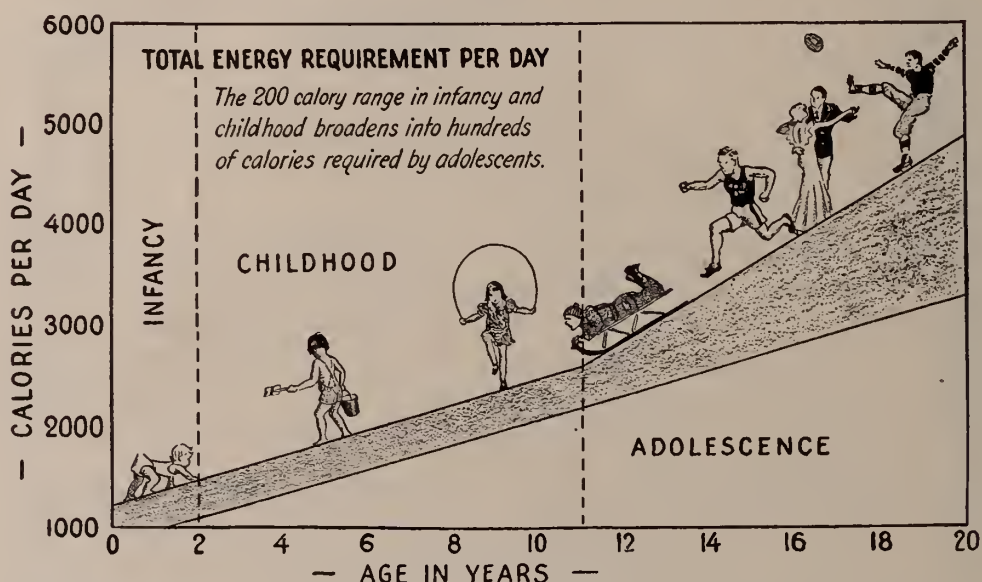


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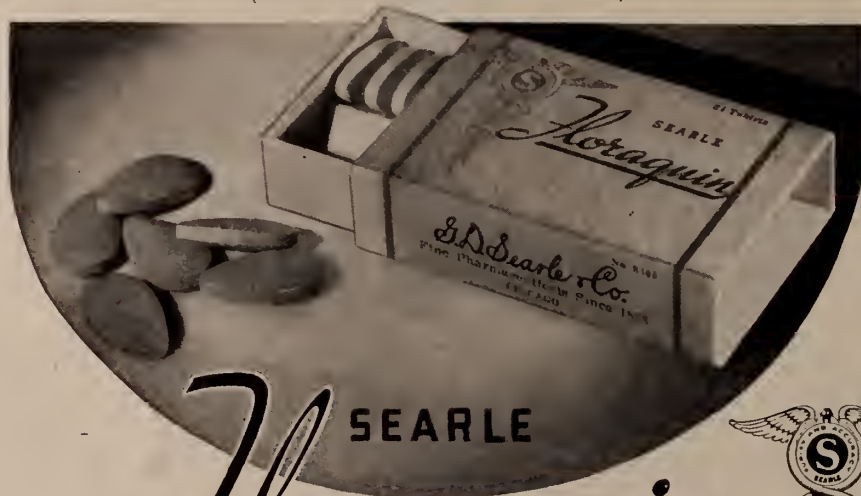
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1. Karnaky, K.J., "Medical Record & Annals," May, 1936.

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★ *Proc. Soc. Exp. Biol. and Med.*, 1934, 32, 241-245
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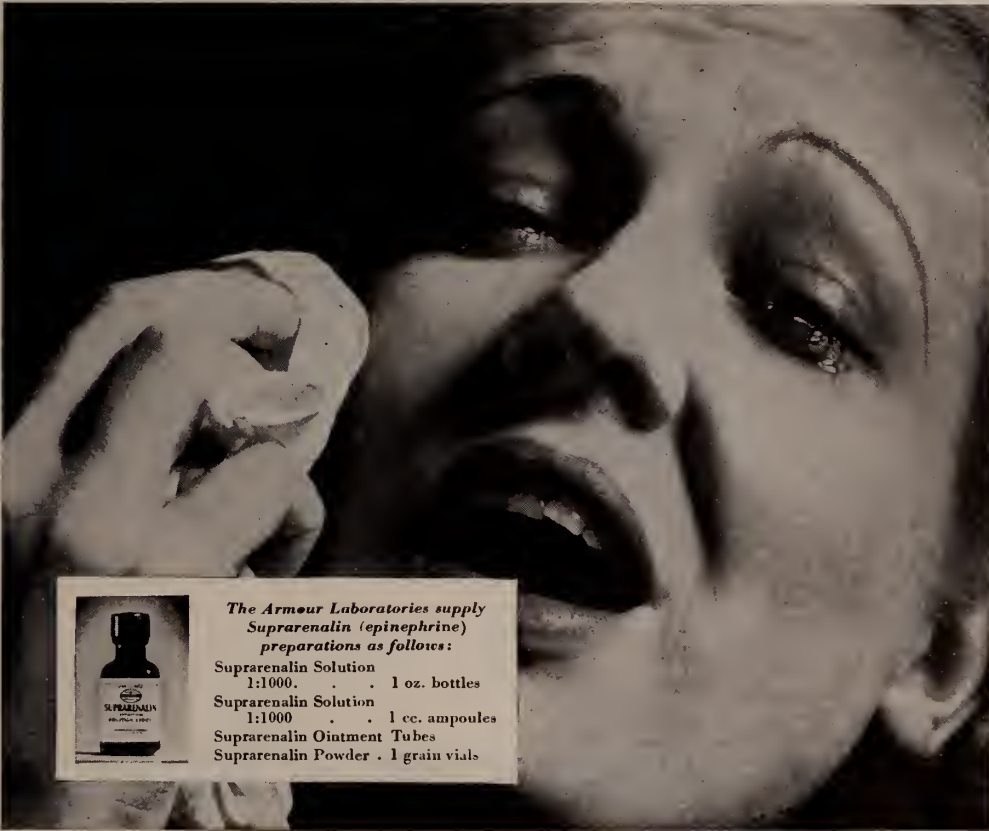
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Editorials

IS BIRTH CONTROL THE GREAT ADVANTAGE TO CIVILIZATION THAT ITS PROPONENTS DECLARE?

Based upon an expanded experience, even though a partial one, at least a preliminary day of reckoning with the gods of birth control confronts us. Do they assume a virtue when they have it not? Or is birth control the great advantage to civilization that its proponents declare? Government statisticians assert that the movement towards a stationary or a declining population is gaining speed surprisingly.

For this decline in the birth-rate, responsibility is laid at the door of artificial control. Economists are taking a new slant upon the maturing and peculiar crop of problems involving economic, educational and political problems certain to result from what will be a stationary population of elders.

Concomitantly with the rapid spread of contraceptive information has been noted an increase in youthful marriage. This angle alone, according to what Dr. Barton C. Hirst of Philadelphia recently told the American Medical Association, may prove to be the cause of much national woe.

The battle for and against birth control exists as one of the argumentative lights of pulpits and forums. One church remains the only religious organization that in its entirety condemns completely the practice, with the assertion that contraception is a violation of divine and natural law.

Federal figures claim that so protean has become the practice of birth control that the population in 1940 will be some 9,000,000 off previous predictions, by totaling only 131,000,000 instead of 140,000,000.

The Bureau of Census in its preliminary figures finds that in 1932 the birth rate fell to less than 18 per thousand of population as against 25.1% per thousand of population in 1915. The indicated rate for 1932 is about four per cent less than that for 1931. Because of a sharp

decline in marriages in 1932, the figures for the future are expected to reveal an even greater decline.

Willard C. Smith, assistant statistician of the federal division of vital statistics notes a proportionate increase of older persons in the population. Between 1920 and 1930 there was an increase of 34% in the number of persons among the population who were 64 years of age or even older. In 1931 and 1932 this percentage has grown greater.

The Committee on Social Trends, whose study began at the request of former president Herbert Hoover, indicates that "young people are more willing to marry if fortified with birth control knowledge than they would be if they were reasonably certain that they would have children born at rather regular and frequent intervals."

And, add to the "causes of the depression"—another finding of this committee is that this declining birth-rate, attributed to birth control may have helped to bring on the depression.

States this committee, in part, "because 'business as usual' has been predicated to such an extent upon a rapidly growing population in the past, it is reasonable to urge that the change in the rate of population growth now going on, and to be expected, be given careful consideration in planning for the rationalization of social and economic life.

"Owing to the advances of medical science, a progressive lengthening of the span of life has been contemporaneous with the decline in births, and an increasing demand for old-age pensions is predicted. Another likely consequence will be the necessity for industry to retain middle-aged employees to a greater extent than now obtains. In the political field the older-age groups may result in greater conservatism."

Dr. Benton Hirst told the American Medical Association, in convention in Milwaukee, that some of the racial strains brought in of late years which "were not of the best are contributing more than their share to our population. We might well ask ourselves if our loss of wealth, our bad government, the impotency of Congress and the wave of dishonesty that have swept the country are not due to a deterioration of the national character."

This of course is protest against the practice of birth control by the nation's "better elements" with their increasing restriction of family.

Discussing both sides of the question of birth control, the familiar arguments for birth control are that having fewer children would make for superior children, that spacing them would improve the health of mothers, and that large increase in the population made it harder to earn a living.

As against these arguments remember that Benjamin Franklin was the fifteenth child. Dr. Hirst expressed a doubt that "the pampered child and a half of to-day is better than the child of a former generation with eight or nine brothers and sisters. An undue limitation of births "has been one of the precursors to the extinction of a civilization or the subjugation of a people by a more virile and prolific race. On this road we have already gone some distance."

In reply to this a writer in *The New York Times* is cited by *The Literary Digest* as saying that the widespread practice of birth control by all economic and social classes will result in a higher birth-rate among the "upper" classes and a lower birth-rate among the "lower" classes is plainly indicated by a number of studies in the differential birth-rate in cities of Northern and Western Europe, where it is known that birth control is being generally practiced by all classes."

Again, the *Louisville Courier-Journal* observes that if "we would call the roll of the 'insidious and iniquitous lobby' which infests the halls of legislation, we would find few, if any, immigrants of late years; but most of them from good families with college educations. If we would trace to their source the corruption funds raised to subsidize governments and control legislatures, we would discover them in enterprises managed by highly educated specimens of the 'better element.' And if observations are confined to the underworld, who own the slums where it spawns?"

The *New York Herald Tribune* can see in a lower birth-rate "some hope that a sense of responsibility for the health, education and opportunities of the next generation is coming to govern the social thought of the present one," yet another statistician of repute recently stated that "the birth-control movement will have much to answer for unless it can square its account with the American people by emphasizing at this very time the need for correctives of its own activities in earlier years. It has

placed bundles of dynamite all over the country. It is now high time that it began to bring back, or at least to remove the fuses."

Other provisional findings of the United States Bureau of Census indicate that this decline in the birth rate is more urban than rural. Fact that in a number of states some rural areas actually experienced an increase in the period of the greatest decline—1931-2.

This would seem to be a fresh instance of false figures. This rural increase in birth rate is probably brought about by the tendency during that time to "go back to the farm" as revealed by the report of the Bureau of Agricultural Economics with its recent estimate of a record rural population of 32,242,000. Like maternity mortality statistics the lack of the same yardstick is apparent. In calculating rate of birth to population in the rural districts proportionately too small a divisor is used and vice versa in urban calculations too large a divisor.

Let no false figures delude you. The decline in birth rate is a general phenomenon and all too dubious a factor for the progress and prosperity of the race.

VARIOUS FACTORS HAVE PAVED THE WAY FOR STEADY INSIDIOUS DETERMINED ENCROACHMENT OF STATE MEDICINE AND LAY CONTROL

If Thomas Carlyle with his scalpel eye and caustic comment lived today he would call physicians rather than economists "Respectable Professors of the Dismal Science."

For so beset upon is medicine by economists both false and true, that instead of the jesters poking fun at the profession as "men who refuse to take their own medicine," attempted lay dictation is making doctors and surgeons become own brothers to those "miserable who have no other medicine but hope."

At the present rate of choking state medicine down the throats of the doctors even hope will soon be separated from the Aesculapian soul, in which this emotion of "faith pitted against experience" still lingers as a prayer that American citizens will realize before it is too late that state medicine, federal control and lay dictation are synonymous with medical destruction.

Various factors have paved the way for this steady, insidious determined encroachment of state medicine and lay control.

To a certain extent the specialist who can see no path but his own is responsible in that the specialist "dressed in a little brief authority," for a time could see only *other specialists* and none of them could visualize anywhere in the scheme of preventive, diagnostic or curative medicine that staple ingredient for public health and welfare and individual health and happiness, the general practitioner and family physician. Though a tendency for the better looms upon the horizon, thanks to the geniuses among the specialists, not altogether has the medical profession escaped from the sad anacoluthonism of having the tail wag the dog!

This error in mechanics has cost the profession dear, and before the end of things is achieved, will cost the general public more dearly! In the gaps between the specialists, in crept the propagandists for state medicine with its tentacles of lay dictation and federal control, irresponsible systems and overwhelming taxation.

Ignoring the family doctor, the man who was one of the most important factors in building up the healthiest of civilized nations, the propagandists took as a table of weights and measures for medical economics, the *standards prevailing in other countries* which was about as sensible, as apt and as accurate as attempting to measure cloth by the quart cup or cornmeal by the yard! Especially when the brokendown standard of state medicine, a miserable failure wherever employed in Europe, a detriment both to the public and to the practitioner, was called upon to be the sheave and pulley by which the most learned crowd of unpaid laborers the world has ever known, the medical profession, is to be lifted from the current chaos of unrecompensed toil and sacrifice, a chaos involving not only the medical profession but its correlating auxiliaries—the dentists and the hospitals and those indicated works of charities—*clinics for the destitute and deserving pauper*.

And a pauper is, by the grace of the dictionary, "A person destitute of means, except such as are received from charity; specifically, one who receives aid from public poor funds."

If an accurate canvass were made of recipients of clinical medical service it is doubtful if fifty per cent. would classify under that definition.

More and more the scope of semi-incomed individuals for gratuities has extended until this drain upon physicians and hospitals has become

unbearable. And in a direct ratio to the burden upon the medical profession has increased the interest in which the non-medical man of wealth or of political influence has seen in the exploitation of this great science, fundamental to individual and national health and welfare, a great and virgin field for interference and command.

Behold as a result the hundreds of foundations, of clinics and of funds for this or that but which really and truly are only weapons for the subsidizing of such medical auxiliaries, and in some instances—God save the mark but it is the simple truth—such medical men as could be brought beneath such malevolent influences. In other words, business men have gleaned their harvest from this land of plenty and of promise, and finding time heavy on their hands, become imbued with a mock philanthropy, a false sense of the humanities and coupling this with their inherent gift for management and cultivated curiosity as to everybody else's affairs, act as sadistic Napoleons and would beat down beneath their fists and their finances any profession, any industry that hitherto had escaped them. Unfortunately, henchmen to their liking, medical traitors, have not been wanting to aid them in their foul desires.

What with this and what with that, the selection of state medicine, the building up of a lay bureaucracy to wheedle and bombast a sacred science, hit upon a fine, hand-polished, gold-encrusted wooden horse with which to land their traitorous designs within the gates.

That the task of the physician today is more intricate than ever before arises from the fact that every inch of progress in medical research has brought in additional batteries of aids to medical efficiency and an attending corps of scientific filles du regiments to wait upon them. The technical technique of modern medicine demands and has hundreds of semi-trained, semi-medical workers. And to these, too little trained for physicians, too much trained to admit their own lack of training, state medicine looks like a vision of Mecca to a devout Mohammedan.

The laissez-faire attitude of the modern family to sickness in its midst has come to insist upon high-priced hospitalization for a sick member of the family, even when it can not be afforded by the family or individual income, rather than to endure the personal discomfort of a sick person in the house. As a result hospital bills far

too frequently go unpaid, and the "high cost of sickness" is laid at the doctor's door and plans to get it back, literally out of his hide, are set afoot by propagandists and backed up by lay philanthropists of mistaken aims.

Now physicians have always been willing to give their services when conditions indicated such a largesse, and probably through the centuries will continue with such chores. But there is not now, nor never was a physician worthy of the name who was willing to let the business men of his own or of a neighboring community, nor the political jobbists tell him when and where and how he was to give of his skill, his health, his means and his wisdom.

And that, my friends, is what state medicine, medical bureaucracies and lay and politically dictated and controlled schemes of medical economics are setting out to do.

ATTORNEY GENERAL OF WISCONSIN HOLDS THAT THE STATE BOARD OF MEDICAL EXAMINERS CAN- NOT DELEGATE ITS POWERS TO THE NATIONAL BOARD OF MEDICAL EXAMINERS

On July 29 the State Board of Medical Examiners of Wisconsin was prohibited from endorsing without further examination any candidates for practice in Wisconsin who had passed examinations of the National Board of Medical Examiners, Philadelphia. The opinion from Atty. Gen. James E. Finnegan was given to Robert E. Flynn, secretary of the board, who had asked whether the board could endorse without further examination, and what the duties of the board were in examining standards of foreign schools whose graduates apply for a license to practice in Wisconsin.

"The statutes have made it the duty of your board to determine whether or not an applicant is qualified to receive a license, and the duty cannot be delegated," Finnegan said. He added, however, that the state board could if it wished use all or part of the questions asked by the national board.

Regarding the other question, Finnegan said: "The state board has broad discretion in determining reputability of professional schools, and where it is impossible for the board to determine whether or not a college is reputable, the burden is upon the applicant to prove its reputability."

In cases where a professional school has been admitted to standing in Wisconsin, however, the state board may not remove it from the approved list without a hearing, Finnegan held.

THE BIRTH RATE KEEPS FALLING—MORE BABIES BORN IN HOSPITALS

The birth rate in the United States today is apparently two-thirds of what it was twenty years ago. In connection with this statement it is interesting to note that more babies are born in hospitals at the present time than in any other period of American history.

The U. S. birth rate in 1916, according to Mr. Glossinger, was exactly 25 per 1,000 population. The present birth rate is approximately 17 per 1,000 population. On the other hand, over 700,000 babies of the little more than 2,000,000 births that occur in the United States annually, or one-third of all births, see their first light of day in hospitals. And the trend appears definitely in favor of hospital confinements and away from delivery in the home.

There are 6,500 registered hospitals in the U. S., 134 with a capacity of approximately 8,000 beds are devoted exclusively to maternity service.

ANTI-BLACK WIDOW SPIDER SERUM AVAILABLE

Concurrent with the reports of more than 600 persons being bitten by the "Black Widow Spider" with a mortality record of 40, comes the announcement that E. R. Squibb & Sons are now supplying Antivenin (Anti-Black Widow Spider Serum). Widespread professional interest has been shown in methods of treating these bites, especially with the steady increase in the number of cases reported from southern, southwestern and western sections of the United States.

Antivenin is prepared by the hyperimmunization of sheep with repeated doses of venom from the black widow spider. The serum is standardized by determining its neutralizing effect when mixtures of it with venom are injected into young rats.

SCIENTIFIC EXHIBITS

The Illinois State Medical Society will meet in Peoria, May 18, 19 and 20, 1937. It is hoped that the Scientific Exhibits will be even better than at the Rockford and Springfield meetings.

Those wishing to prepare exhibits should start planning them now and should apply for space at an early date. The fact that the meeting next year comes about three weeks before the A. M. A. would make it possible for those planning exhibits for the Atlantic City meeting to show them first at Peoria. Many have found that it is possible to make improvements in any exhibit after its first presentation. We are informed that the presentation of an exhibit at a state society meeting does not interfere with its subsequent presentation at the A. M. A.

Those desiring applications for space, write the secretary of the Committee on Scientific Exhibits.

N. S. DAVIS, III
700 North Michigan Avenue
Chicago, Illinois.

THE WILLIAM HAMLIN WILDER FOUNDATION

The Chicago Ophthalmological Society is raising a Memorial Fund of \$10,000 in memory of Doctor William Hamlin Wilder.

1. This project shall be known as the *William Hamlin Wilder Foundation*, sponsored by the Chicago Ophthalmological Society.

2. The purpose of the Foundation shall be to establish and maintain a Lectureship in Ophthalmology or Allied Topics, the lecture to be presented in Chicago every two years.

3. A fund of ten thousand dollars shall be raised and put into trust in the Northern Trust Bank.

4. The fund shall be under complete control of the Bank which shall expend the interest in accordance with the provisions of this Foundation and under the direction of the Governing Board.

5. The interest on the Fund shall be used solely for payment of an Honorarium to the Lecturer and the expenses of publication of the lecture, a copy of which shall be sent to every contributor toward the Fund.

6. Administrative Regulations.

a). The Governing Board of the Foundation shall consist of the President of the Chicago Ophthalmological Society and the three most recent Past Presidents.

b). The Lecturer shall be selected by the Governing Board at least one year in advance.

c). The Lecture shall be given at a Special Meeting of the Chicago Ophthalmological Society, devoted solely to that purpose and open to all, the time and place to be selected by the Governing Board.

d). The Governing Board shall arrange for publication of the lecture, alternately in the *American Journal of Ophthalmology* and the *Archives of Ophthalmology*.

e). The Governing Board shall be the sole authority to authorize expenditures by the Bank.

f). Any of the provisions of this Foundation may be changed by joint action of the Board of Governors and the Northern Trust Bank, should circumstances make such change advisable.

All those wishing to contribute to the Fund will please send their checks to the Northern Trust Company, care of the William Hamlin Wilder Foundation.

WORKMEN'S COMPENSATION ACTS: DEATH FROM SUNSTROKE

Death from exposure to the elements, including the heat of the summer and the cold of the winter, said the Supreme Court of Iowa, is not compensable if the hazard is the same to which the general public is exposed. For compensation to be recoverable for death from sunstroke, the deceased must have been subjected to a greater hazard from heat than that to which the public generally in that locality was subjected. This distinction is recognized by all the authorities. Compensation was denied in this case. (*Wax v. Des Moines Asphalt Paving Corporation* (Iowa), 263 N. W. 333.) —*Medicolegal Abstract, Journal of the American Medical Association.*

MEDICAL ECONOMICS

Frank L. Brown, M. D.
E. P. Coleman, M. D.
John R. Neal, M. D.
Ralph Peairs, M. D.
P. H. Kreuscher, M. D.
C. E. Wilkinson, M. D.

Edited by the Committee on Medical Economics

of the

Illinois State Medical Society

E. S. Hamilton, M. D., Chairman

Kankakee, Illinois

Address all letters and communications to the Chairman.

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C. S. Skaggs, M. D.

The recent statement of the Editor of the American Medical Association, "Truly social medicine and Medical Economics are the problem of the day," is concrete evidence that the importance of this subject has penetrated the seats of the mighty as well as those of the general practitioner. For some time the voices raised on this subject have been like those crying out in the wilderness, oftentimes apparently in vain. It is encouraging to see that the message has finally been received and it is to be hoped that real leadership will be given to component state and county societies in their endeavors to correct present evils and avoid those impending.

Reading current writings on medical economic subjects, one is impressed by the attention being given to the potential political influence of the medical profession. This influence is rarely, if ever, considered from a partisan angle, but from the the larger angle of real service to the state and nation. Surely no man should apologize for trying to lend a helpful influence to his country and his fellowman. We would particularly recommend the article of Dr. Fred Moore on "Interprofessional Relations in the County," as presented at the annual meeting of the Northwest Regional Conference last winter. This is available in mimeograph form to those interested on application to Dr. Harold Camp, Secretary of the Illinois State Medical Society, at Monmouth, Illinois. To those who have thought little on the subject it will open up an entirely new field of activity for the medical profession with concrete plans for action and accomplishment. Recently the Minnesota State Medical Society Bulletin contained the following:

What can I do for my county and state medical society?

Do you know the Senator^{*} from your own legislative district?

Do you know the Representatives from your district?

If not, make it a point to know both.

1. Find out how they feel about Organized Medicine.

2. Find out what their ideas are on Quack medicine too—on State Medicine. And on all the economic problems that confront the medical profession today.

Friendly informal conferences on these matters between legislators and the doctors in their own districts provide an excellent source of information for legislators.

Information thus secured on the policies of the legislators will be of value, also, to the Committee on Public Policy and Legislation of the State Association.

Of course Illinois has a most efficient Committee on Legislation, under the chairmanship of Dr. John Neal of Springfield and they watch out for the good of both the people and physicians of Illinois. However, it seems only right that all physicians of the State should evidence their interest in the act of their elected legislators by knowing them and letting them know their wishes and desires. It is encouraging to see numerous state societies recommending this more friendly relationship with the legislators both before and after their election. Following this article will be the annual report of Dr. Neal of the activities of his Committee for the past year. A careful reading of the same will convince all that Dr. Neal is most alert and knows exactly what is going on in the Illinois Legislature. Also, he is constantly watching for any legislation inimical to the citizens of the state as well as the medical profession. His contacts with the legislature make his influence great.

With the return of the care of the indigent to the township supervisors, there is the danger that one of the most fundamental privileges of the people may be lost and that is they may no longer be able to have the physician of their choice in case of sickness or injury. This is, of course, unfortunately true when all of the

work is done by some one physician, selected by the supervisor, regardless of whether he works on a contract or at reduced fees. Many people will not have the so-called "poor doctor" and in that event the family physician carries on, without pay as usual. It is wrong of course, but does answer one of the greatest criticisms of state medicine and that is the loss of the right of the poor to have the physician of their choice. In a later article we will discuss the plan of having the local medical society take the work as a group and allow the poor to select the doctor they desire. This plan which originated in Waterloo, Iowa, over twenty years ago has been in use in Illinois for over fifteen years with apparent satisfaction to the poor, the supervisors and the medical profession. Any plan that can satisfy groups with such different desires surely is worth consideration by the rest of the state.

Be sure and read the report of the Legislative Committee of the Illinois State Medical Society for the past year.

E. S. HAMILTON,
Chairman of Committee on Medical Economics

RATIONAL TREND MARKS LEGISLATIVE ACTS

The State Legislature has sat almost continuously since early October, 1935. To meet problems of broad social significance which required new or modified legal sanction, the Governor felt impelled to call the General Assembly into four extraordinary sessions. These have run simultaneously and all but the second has terminated. The second special session, called primarily to deal with the problem of unemployment relief, will resume deliberations in August after a recess period of some two months.

Although the terms of the call for the four sessions were broad enough to embrace other subjects, the problems of imperative importance related to relief, local government finance, workmen's compensation and elections. The chaotic character of the situation which had arisen in connection with these matters is suggested by the fact that 423 bills were offered in the four special sessions as remedial measures and no less than 114 have become laws.

While none of the bills offered related strictly to medical practice or the medical profession, many of the measures are of profound interest

to physicians as citizens. In general, the bills offered and laws enacted reflect a sounder and more practicable attitude of the lawmakers, and indirectly of the public, on economic and social matters than has prevailed during the preceding three years. Apparently, the assemblymen at Springfield as well as members of Congress at Washington are about to discover that even the riches of Santa Claus can be exhausted and that his ample storehouse must be refilled at the source of production or remain empty.

People generally had apparently forgotten or refused to believe that federal funds come from local sources and that States obtain revenue only from the inhabitants of its component political units. States appeared to regard federal grants as gifts that flowed from the inexhaustible fountains of a benign and generous Uncle Sam who had only to push a button to replenish his coffers, local agencies assumed a similar attitude toward the State.

Laws passed by the four special sessions in Illinois indicate that a reverse trend of thought has set in. No less than 43 of the new laws enacted modify the taxing and bonding powers of local governmental agencies, county, municipal, school and park boards and councils, so that emergency as well as ordinary problems of finance can be met locally. While some equalization of local burdens is necessary with respect to relief, education and other local responsibilities in many instances where peculiar circumstances prevail, the basic principle of requiring each locality to be self-sustaining is gaining ground and the newer laws reflect movement in this direction. This is the most promising aspect that has characterized legislative attitudes for many years.

The new laws concerning occupational diseases and workmen's compensation represent an outstanding forward step in legislative action. A close study of the provisions of these laws, four in number, indicates that they are fair and just to workmen and employers alike. They provide for the reasonable compensation of employees, or their beneficiaries, who suffer injury, damage to health or death from occupational hazards. At the same time they set a definite limit to the financial responsibility of the employers who participate in the system created.

The State Industrial Commission and the State Department of Labor have been given

referee powers with respect to disputes in compensation cases and have been clothed with authority to promulgate rules and regulations for the control of environmental conditions that affect occupational hazards.

Supplemental to the laws, there has been created in the State Department of Public Health a division of industrial hygiene. With a staff of specialists in industrial sanitation, headed by a physician experienced in industrial medicine, this new division will make scientific studies and render reports that should be of great value to all concerned in the control of occupational diseases.

With this set-up, Illinois is in a position to lead the nation in industrial medicine of a preventive character. This is in line with the growing industrial importance of the State.

Designated as House Bills 9, 10, 11 and 12, while in the legislature, third special session, the new workmen's compensation and industrial hygiene laws raise substantially the maximum amounts recoverable as compensation for injury, the specific sums varying according to the pay of the employee and the number of his dependents; gives the State Industrial Commission power to make rules and regulations concerning ventilation, guarding machinery, storage of personal clothing and other property, methods of handling poisonous substances, means of controlling dust, fumes, gases, vapors and air pressure as these things affect employees; requires employers to accept the rules of the Commission.

While employers may be compelled to install dust and fume collecting machinery and utilize other methods of controlling environment, they are relieved from the liability of "ambulance chasers" and other extortioners who use disgruntled and gullible employees, alleged to have suffered injury from employment, to persecute manufacturers.

This is a sample of sound legislation that recognizes human values, scientific methods of disease control and the economic and social factors involved in modern problems. Here a reasonably fair balance has been struck between the complex and varied elements in all problems that affect civilized existence under modern industrialism.

It is not too much to say that the attitude of organized medicine in Illinois, as expressed

through the Council, officers and committees of the Illinois State Medical Society, has been instrumental in bringing about a more rational attitude in legislative matters.

The next regular session of the General Assembly, which opens in January, 1937, will undoubtedly bring with it a host of proposals that range from fantastic to ridiculous but recent experiences suggest that less experimental and less radical proposals than many offered and enacted during the last few years will alone command serious consideration.

J. R. NEAL,

Chairman Legislative Committee.

FREE SERVICE FOR THE HARD-OF-HEARING

Probably every physician comes into contact at least occasionally with one of the three following groups: 1. parents of a child who can neither hear nor speak; 2. parents of a child whose hearing is somewhat impaired; 3. adults who are losing their hearing. But although physicians are frequently confronted by the educational, social and personal problems presented by deafness, not all of them are aware of sources of information on these problems. Therefore we call attention to the following letter describing the free services which the Volta Bureau, Washington, D. C., is prepared to offer:

"We consulted several specialists, and all of them confirmed our fears, but none offered any solution of our problem." Thus the mother of a small deaf child wrote to the Volta Bureau. The sentence might be quoted verbatim from many letters written by parents of deaf or hard of hearing children, or by hard of hearing adults.

The knowledge that deafness is present and that it is incurable comes with the force of a major calamity. It is so crushing in its effect that something positive in the way of help must be offered immediately, if the individual is not to spend desperate years in a bewildered effort to adjust himself. The parents of a deaf child must be told that the child can be taught to speak and can be successfully educated, and that this education may be begun at home immediately, even if the child is not more than two years old. The parents of a child whose hearing is only slightly impaired must be given advice as to his adjustment. The hard of hearing adult must be told about lip reading, about hearing aids, about social efforts in his behalf.

The Volta Bureau was established for the purpose of furnishing all this information to all who ask for it. Its services are free. Alexander Graham Bell, the son of a hard of hearing mother, the husband of a deaf wife, the lifelong friend of everyone handicapped by deafness, used the money received as a prize for inventing the telephone to found the Volta Bureau so that anyone confronting the problems of deafness might be assured of help. Advice is given as to schools and pre-school training, lip reading instruction, hearing aids,

social contacts, psychological difficulties. While the Volta Bureau is not equipped to do employment service, it gives information in regard to the fields of activity that are open to the deaf and the hard of hearing.

The Volta Review,, a magazine for parents and teachers of the deaf and for the hard of hearing, is on the reading table of many physicians. Pamphlets dealing with all phases of deafness, except medical problems are available to all who ask for them. Lists of such pamphlets and sample copies of the magazine will gladly be sent free of charge. The Volta Bureau is located at 1537 35th St. N. W., Washington, D. C.

ANNUAL MEETING OF THE INTER-STATE POST GRADUATE MEDICAL ASSOCIA- TION OF NORTH AMERICA

The International Assembly of the Inter-State Postgraduate Medical Association of North America, under the presidency of Dr. David Riesman of Philadelphia, Pennsylvania, will be held in the public auditorium of St. Paul, Minnesota, October 12, 13, 14, 15 and 16 with pre-assembly clinics on Saturday, October 10 and post-assembly clinics, Saturday, October 17, in the hospitals of St. Paul.

The aim of the program committee with Dr. George Crile as chairman is to provide for the medical profession of North America an intensive postgraduate course covering the various branches of medical science. The program has been carefully arranged to meet the demands of the general practitioner, as well as the specialist. Extreme care has been given in the selection of the contributors and the subjects of their contributions.

In cooperation with the Minnesota State Medical Association, the Ramsay County Medical Society will be host to the Assembly and has arranged an excellent list of committees who will function throughout the Assembly.

A most hearty invitation is extended to all members of the profession who are in good standing in their State or Provincial Societies to be present and enjoy the hospitality of the medical profession of St. Paul. A registration fee of \$5.00 will admit each member of the medical profession in good standing to all the scientific and clinical sessions.

A list of the distinguished teachers and clinicians who will take part on the program will appear in the September issue of this JOURNAL.

Special railroad rates will be in effect.

For further information write Dr. W. B. Peck, Managing-Director, Freeport, Illinois.

IMPRESSIVE STATEMENTS

The application of continuous mild suction to an indwelling tube in the stomach or duodenum can drain the intestinal tracts as far the ileo-cecal valve.—The British Medical Journal, May 9, 1936, Page 930.

An unusually high total leucocyte count early after occlusion is thought to be of serious significance.—The American Heart Journal, May, 1936, Page 590.

Essential hypertension often exhibits an early vari-

able stage, responding readily to simple medical measures, difficult to distinguish from vasomotor instability and simple emotional or functional disorders.—N. E. Journal of Medicine, May 21, 1936, Page 1022.

In the present day depression the nutritive state of the American school child has not suffered . . . the general population as a whole seems to be as well nourished as formerly.—J. A. M. A., May 30, 1936, Page 1869.

In cases of chronic trauma to joints, symptoms may develop so slowly that their connection with the trauma may be overlooked and well advanced articular lesions may remain symptomless until some unusual strain is experienced.—J. A. M. A., May 30, 1936, Page 1900.

Improper surgical masking has constituted a persistent weak link in the chain of aseptic operative technic.—American Journal Surgery, June, 1936, Page 477.

Prostatitis and spermatocystitis have come into prominence as foci of infection in the past ten years, and medical men no longer expect a history of gonorrheal involvement when such foci have been found associated with remote disease.—Urologic and Cutaneous Review, June, 1936, Page 379.

There is relatively little difference in the mechanism of the respiratory reflexes of coughing and sneezing. Sneezing taking the place of coughing in pertussis is so characteristic that the diagnosis may be made instantly.—The Journal of Pediatrics, May, 1936, Page 583.

Solution of potassium arsenite is apparently an effective palliative agent in the treatment of chronic myelogenous leukemia.—Annals of Internal Medicine, May, 1936, Page 1501.

Liver therapy should be used routinely for roentgen sickness.—The American Journal of Roentgenology and Radium Therapy, May, 1936, Page 687.

If certain criteria are rigidly observed in each individual case, birth control based on the safe period can be employed with a reasonable measure of certainty.—The British Medical Journal, May 30, 1936, Page 1094.

Convalescent measles serum given just before and within six days after exposure usually prevents the disease; serum between the sixth and tenth days as a rule modifies the severity of the infection; serum given after the onset of the infection, (most frequently on the tenth day), is without beneficial effects.—Annals of Internal Medicine, May, 1936, Page 1471.

The extreme subdivisions (in this textbook on surgery being reviewed) shows how specialized is surgery in America today. There are separate authors for femoral and inguinal hernia; five deal with the rectum, and seven with the stomach. No less than nineteen authors write on fractures of the limbs. One gathers that the one who describes fractures of the shaft and upper ends of the tibia and fibula is not considered so great an authority on fractures of the lower ends of these bones; the co-operation of two experts has been deemed necessary on the question of fractures near the elbow joint.—The Lancet, May 30, 1936, Page 1242.

It seems logical to assume that the virus of poliomyelitis, by the time signs and symptoms of the disease become obvious in infected human beings, has already reached practically all of the nerve cells that are likely

to be attacked. One would expect convalescent serum given after the onset of signs of the disease to be valueless. Such expectations are in accord with the clinical findings reported by careful workers.—*Annals of Internal Medicine*, May, 1936, Page 1473.

There are scare-words which, when carelessly applied to a patient, make him anxious and apprehensive. And there are comfort-words, expressions which, coming from a trusted physician, banish fear. By use of these symbols the nervous system can be played upon as though an instrument. The charlatan employs them to establish conditions which he can capitalize for his own profit. The wise doctor knows how to use them as a part of his therapy.—*Annals of Internal Medicine*, May, 1936, Page 1461.

OPTOMETRY: CORPORATE PRACTICE OF OPTOMETRY ILLEGAL IN ARIZONA; INJUNCTION TO RESTRAIN PRACTICE

The Funk Jewelry Company, a corporation, employed a licensed optometrist to examine eyes and to prescribe glasses. The state of Arizona, on the relation of the attorney general, instituted action to enjoin the corporation from practicing optometry. From an adverse judgment in the trial court, the corporation appealed to the Supreme Court of Arizona.

The optometry practice act, said the court, prescribes certain qualifications to be possessed by applicants for licenses to practice optometry. These qualifications necessarily exclude a corporation from practice. It cannot qualify. It does not possess the necessary moral and intellectual qualities. The corporation, therefore, when it employed a registered optometrist as a part of its business to examine eyes and to prescribe glasses, violated the optometry act. It was apparently contended, however, that even though the corporate practice of optometry was illegal, an injunction would not lie to restrain that practice. The optometry act, observed the court, prescribes no punishment for those who violate its provisions. Consequently, the ordinary criminal sanctions, such as fine and imprisonment, are not available to prevent continued violations of the act. Unless the writ of injunction is available, there is available no remedy to enforce the act. Furthermore, the court continued, while the civil process of injunction may not ordinarily be used to prohibit persons from committing a crime, where the crime is a public nuisance or affects the interests of the state, injunctions will lie. *State v. Smith* (Ariz.), 29 P. (2d) 718, 31 P. (2d) 102, 92 A. L. R. 168. The tendency is to grant injunctions to prevent unlicensed persons from practicing the professions. If the present action, said the court, had been brought by the state board of optometry or by members of the optometry profession, there would be no question of their right to maintain the action, in view of the trend of judicial opinion. The present action, however, was brought by the state, on the relation of the attorney general. The optometry act, continued the court, was passed for the general welfare of the people of the state. Its purpose is to protect the health of the

people, and, while the state may not have any pecuniary interest in the enforcement of the act, it has a very much higher interest, and that is in the protection of the health and well being of its people. That being the case, it seemed to the court that the state, acting through the attorney general, could lawfully apply to the courts to exercise their equity powers to enjoin violations of the act.

The corporation apparently further contended that the state board of optometry had entered into some kind of an agreement with the licensed optometrist whereby the board agreed that the optometrist might render the services for which he was employed for a limited length of time. Such an agreement, the court said, would not have the effect of suspending the requirements of the optometry act. Furthermore, the agreement did not purport to authorize the corporation to practice optometry, and if it had, the agreement would have been void.

The judgment of the trial court, granting the injunction was therefore affirmed. (*Funk Jewelry Co. v. State ex rel. La Prade* Ariz.), 50 P. (2d) 945.)—*Medicolegal Abstract, Journal of the American Medical Association*.

COMPENSATION OF PHYSICIANS: LIABILITY OF THIRD PERSON FOR MEDICAL SERVICES

The plaintiff, a physician, sued the defendant to obtain payment for medical services rendered a Negro employee of the defendant. The Negro, suffering from a gun-shot wound, was taken to a hospital owned and operated by the plaintiff. Immediately thereafter the defendant came to the hospital and, according to the plaintiff, said: "If you will go ahead and take care of the case, I will pay the bill." The testimony of several witnesses tended to corroborate the plaintiff. The defendant, however, denied that he had made the promise just noted and, from a judgment for the plaintiff, he appealed to the Supreme Court of Oklahoma.

The Supreme Court, however, believed that the evidence reasonably tended to support the verdict of the jury. In *May v. Roberts*, 28 Okla. 619, 115 P. 771, relied on by the court in the present case, the plaintiff, a physician, brought suit for services rendered the wife of the defendant's tenant. The defendant had requested the physician to visit the tenant's wife and told him that he would see that the bill was paid. Such evidence was held to be competent and material and to establish a primary liability not within the statute of frauds. Finding no error in the record in the present case, the Supreme Court affirmed the judgment in favor of the physician. (*Gloeckler v. Weedn* (Okla.), 50 P. (2d) 634.)—*Medicolegal Abstract, Journal of the American Medical Association*.

A SCHOOLBOY'S EXPLANATION

Water is composed of two gins, Oxygen and Hydrogen. Oxygen is pure gin, Hydrogen is gin with water in it.

Original Articles

A CRITICAL REVIEW OF 822 OPERATIONS ON THE ADRENAL SYMPATHETIC SYSTEM WITH SPECIAL REFERENCE TO ESSENTIAL HYPERTENSION

(From Stenotype Notes)

GEORGE W. CRILE, M. D.

CLEVELAND, OHIO

Mr. Chairman, Ladies and Gentlemen: It is my pleasant duty to acknowledge the great pleasure it is for me to appear once more before this audience. My principal thesis will be an attempt to suggest a background for the genesis of hypertension.

I propose as my major premise, that essential hypertension is an example of pathologic physiology of the adrenal medulla-sympathetic complex. As evidence, in support of this premise, it must be shown what this pathologic physiology is and there must be offered evidence that there are other types of pathologic physiology that are analogous to essential hypertension. Then I must offer evidence that we do know what mechanism has the greatest control of blood pressure. I must show that in nature the mechanism that has the power to affect blood pressure varies in size and complexity in different types of animals, and finally, the effects upon hypertension of interference with the adrenal sympathetic system must be offered in evidence.

How shall we define pathologic physiology? Pathologic physiology is a non-adaptive excessive activity of an organ which is functioning normally. The only tissue that, in my opinion can exhibit a pathologic physiology is nerve tissue because pathologic physiology is that state in which the mechanism is set in motion, non-adaptively, at a level above the normal limit. The mechanism cannot stop and re-adjust itself. It is as if one set his automobile at high speed and then found he could not again bring it back to the normal rate or stop its running; that would be a pathologic physiology. It is clear that pathologic physiology can only concern a tissue that can be conditioned in Pavlov's sense. The only tissue that can be thus conditioned is nerve tissue. Bone, muscle, skin or the digestive tract cannot be conditioned, or

changed so that it will act in this way or in that way or repeat its action. That can be done only by nerve tissue. Pathologic physiology, therefore, involves nerve tissue. In accordance with this conception essential hypertension is a pathologic physiology of the nerve tissue in that mechanism which presides over the genesis of increased blood pressure.

We all know that in research in any branch of science it is not often that we can find the exact proof of any conception or theory. We depend very largely upon analogies and parallels. Therefore, of the analogies and parallels to hypertension which might be offered I shall first cite Raynaud's disease. Until recently Raynaud's disease was a mysterious disease; it was not understood and was incurable. Then it was found that Raynaud's disease was a pathologic physiology of that part of the sympathetic nervous system that presides over the arteries in the extremities—a continuous, sustained and unadaptive contraction of the arteries of the extremities due to a conditioning of the lumbar and the dorsal ganglia which preside over those arteries. These little power plants continue to manufacture energy constantly and unadaptively. When these ganglia are removed then the blood vessels dilate and Raynaud's disease is abated or cured.

I am proposing that essential hypertension is an example of a universal Raynaud's disease. If we can think of a universal contraction of all the blood vessels of the whole arterial tree in the same sense that the arteries of the extremities become contracted in Raynaud's disease then we can see that there would result a continuous, sustained high blood pressure just as there is a continuously cold extremity with gangrene in Raynaud's disease. When the pathologist examines the ganglia which have been removed in Raynaud's disease, as the result of which removal the disease is cured, he does not find any lesion.

Exophthalmic goiter or hyperthyroidism presents another analogy to hypertension. Those of you who are not familiar with this disease will be greatly surprised to find, as we did, that hyperthyroidism is due to a pathologic physiology. For a long time there has been a great deal of discussion as to the nature of hyperthyroidism. It became clear to many observers that the thyroid gland could not set up in itself

*Oration in Surgery, Eighty-sixth Annual Meeting, Illinois State Medical Society, Springfield, May 20, 1936.

a pathologic physiology manifested by excessive activity but that the stimulating energy must be brought to the thyroid gland causing it to become hyperactive. There is no more possibility that a gland could by itself or from a force within itself set up an increased activity, than that a motor car could start itself and by itself take a trip downtown. We must detach ourselves from that vitalistic idea.

I believe that the symptoms of hyperthyroidism are the result of excessive activity of the adrenal glands and the sympathetic nervous system, and that the thyroid gland has nothing to do with it. In regard to those cases in which hyperthyroidism recurs in spite of repeated operations we may say that if it is true that there is present a pathologic physiology of the sympathetic nervous system then it is that pathologic physiology which throws the thyroid into this state of pathologic activity because there is nothing wrong with the thyroid secretion except that there is too much of it. It follows that if we should denervate the adrenal gland and break up some part of the sympathetic plexus we should abate or cure hyperthyroidism. We have now performed this operation on 119 patients with recurrent hyperthyroidism, and for one reason or another, in primary cases in which there has been an associated disease like diabetes or hypertension. In these cases the thyroid gland has not been touched at all. The denervation of the adrenal gland abates the disease with certainty. The origin of the disease was in the sympathetic nervous system and, of course, the medulla of the adrenal gland is part of the sympathetic nervous system. In all these cases the disease was abated or cured; the symptoms disappeared, the increased metabolic rate disappeared, the size of the gland receded to normal and increased activity disappeared.

A third analogy to the pathologic physiology of hypertension is presented by neurocirculatory asthenia. This disease occurs, just as does hyperthyroidism, in the highly intelligent fraction of our citizens, which means that the entire sympathetic nervous system is at an abnormally high level of activity. In France we saw cases of this disease which we called "soldier's heart." Those of you who followed the progress of that group of cases will remember that they resembled cases of hyperthyroidism, except that there was no exophthalmos and an increased basal metabolic

rate was rarely present. These patients had tremor, nervousness, tachycardia, fatigue, exhaustion, excitability and dilated pupils. All that is necessary in making the diagnosis of neurocirculatory asthenia is to consider the functions of the sympathetic nervous system, and call the roll. In 154 cases of this disease, and a large percentage of these patients were sent to us as examples of one degree or another of hyperthyroidism, the disease was specifically relieved by sympathectomy of one type or another, for denervation of the adrenal glands or breaking up the plexus itself interferes with the power station, the activity of which drives the system to increased activity.

In well developed cases of neurocirculatory asthenia, we often see the pounding heart and the tachycardia cease while the patient is on the operating table as soon as the division of the sympathetic nerves has been made. While the patient is on the table the cold, sweaty hands and feet become dry and warm just as after the operation of ganglionectomy for Raynaud's disease the hands and feet become warm and the sweating disappears while the patient is still on the operating table.

Let us now apply this principle of pathologic physiology in the energy system of the body to essential hypertension. A study of the comparative anatomy of various types of animals gave us a background for an understanding of the energy characteristics of man. If our conception regarding the rôle of the sympathetic system is true then we should find as great a difference between the energy controlling mechanisms of different types of animals as the engineer can find between an airplane engine and a tractor engine. By the energy controlling mechanism we mean the special senses, the brain, the thyroid gland, the adrenal medulla and the sympathetic complex. These are the tissues that mediate between the external and the internal environment. The energy controlling mechanism is the only mechanism that has the power of changing the status of the oxidation. What would an engineer do, if he were to design an animal, which would depend as completely on oxidation for energy as the combustion engine depends on oxidation for energy? If he wanted to make an animal that had sustained activity like the human being, what would he do? He would design a gland which would have the

power of maintaining the energy at a constant level day and night, namely, a thyroid gland. Then if he wanted to make an animal that was very bright, very quick and very powerful, he would build a mechanism that would respond adaptively to the demands of the moment, namely, large adrenal glands and a large and complex sympathetic system. Therefore, it was necessary for us to find in the animal kingdom by studies of comparative anatomy whether or not Nature, the greatest engineer, had done this.

Before describing these studies let me take up one more important point. T. R. Elliott and others have shown that the sympathetic nerves produce a substance which has been called sympathin. This substance has the same power of effecting quick oxidation that adrenalin has, perhaps even more. It should be remembered, however, that the sympathin that is produced within the nerve fibers of the sympathetic system does not pass into the circulation as adrenalin does but acts within the nerve fibers themselves.

With this in mind, let us consider the equipment for the production of energy in those powerful animals which manifest great outbursts of energy. One would expect to find that in such animals the most efficient and largest possible mechanism for "flashing" the circulation of the blood has been built up. It is necessary, moreover, not only that there be a mechanism for speeding up and forcing the circulation but that this mechanism be correlated with a mechanism for increasing the supply of oxygen and we would expect to find, therefore, that the larger the adrenals and the more complex the sympathetic system the greater would be the capacity of the heart and the lungs.

To discover whether or not this conception was valid the Cleveland Clinic Foundation, the Cleveland Museum of Natural History, and the Department of Comparative Anatomy of Western Reserve University first studied many varieties of animals in North and South America.

Later in order to study the greatest possible variety of animal life in the world in its natural habitat we organized an expedition which went into Tanganyika Territory in Africa last winter. There we set up a laboratory in the field so that the animals could be examined immediately after they were killed. We collected 220 different animals. We weighed them as a whole

and weighed every organ and made comparative anatomy studies, comparing these findings with those in the animals examined in our former studies.

We have determined the ratio of the weight of the adrenal glands to the whole body weight. In the alligator, for example, this ratio was 1:280,000. The alligator has no sympathetic complex having only a simple nerve supply of the adrenal glands. Then we have studied the opposite order of animals, those that exhibit the largest outbursts of speed such as the lion and the tiger. We found as we expected, a mechanism in the lion and the tiger which differed entirely from that found in the alligator. The adrenal-body weight ratio, instead of being 1:280,000 as in the alligator was only 1:11,000 in the lion. The alligator, crocodile and reptiles have a very small adrenal gland and no sympathetic complex and, therefore, they could not play the rôle of the tiger or lion any more than a tractor engine could play the rôle of an airplane engine. Not only do the lion and the tiger have big adrenal glands but there are so many ganglia in the sympathetic system that they resemble a cluster of grapes.

We know that sympathin is secreted by these nerve fibers and the ganglia. Impulses come from the brain down into this system which cause a flash of oxidation. What does that flash of oxidation do? It is clear enough that it puts its energy into the sympathetic nerves, and thus speeds up the oxidation in the nerves of the entire arterial tree, for from this power plant, the sympathetic complex, many branches pass into the aorta from which the nerves pass to the smaller arteries and thence to the arterioles and the capillaries. It is just as in a lighting system, somewhere there is a power plant and there is no break in continuity from that power plant to the light.

We have now performed 874 operations upon this sympathetic complex or upon some part of this generating system for various diseases which we believe to be due to a pathologic physiology of this system. We have included essential hypertension in this group of diseases. We early discovered a very interesting fact, however, which is that there is more than one phase to the action of this energy plant, for whereas denervation of the adrenal glands relieves hyperthyroidism and neurocirculatory as-

thenia, it does not permanently relieve hypertension. The denervation of these glands does have a temporary effect upon hypertension and so does unilateral adrenalectomy. But the blood pressure tends to return to its former level. In any case, a direct attack upon the adrenal gland would seem to be contraindicated because if too much adrenal tissue is excised adrenal deficiency will follow. The early marked effects of these early operations, however, did indicate that the adrenal glands and sympathetic system when in a state of pathologic physiology can affect the energy possessed by the arterial tree from the aorta to the capillary bed. Denervation of the adrenal glands improved the results over those secured by adrenalectomy especially in cases of early hypertension in young subjects, the improvement in some cases having lasted for as long as five years. We also had good results in cases in which the hypertension was associated with some other manifestation of a pathologic physiology of the energy-controlling system such as hyperthyroidism or polyglandular disease but still there were recurrences of the hypertension in many cases. We, therefore, extended the operative procedure to include resection of the major, minor and least splanchnic nerves. This operation improved both the immediate and the later clinical results and in view of the gravity of the disease we felt justified in recommending this enlarged operation especially in view of the fact that headaches and other subjective symptoms were relieved. But it became evident that some other still undiscovered factor in the production of the hypertension must be found.

It was at this point that we grasped the full significance of our studies of the comparative anatomy of the energy-controlling system in man and animals. We realized that the mechanism involved in the production of hypertension must include the extensions of the sympathetic system to the aorta itself.

A significant observation also indicated the function of the sympathetic system in the production and maintenance of high blood pressure. When, in the course of a denervation of the adrenal glands and division of the splanchnic nerves, the sympathetic nerves are manipulated there is a rise in the blood pressure, both systolic and diastolic, sometimes to such a height that it cannot be measured by a manometer,

while on the other hand if the field is first flooded with novocain there is no rise but rather a dramatic fall in the blood pressure. The adrenal-sympathetic complex is the only tissue in the body, the manipulation of which can thus specifically affect the blood pressure.

An operative procedure based on this observation and on the findings in our studies of comparative anatomy should enable us to reduce the high blood pressure of essential hypertension to normal on the operating table and since the post-ganglionic fibres cannot regenerate there should follow a corresponding permanent reduction. There should be no disturbance of any other function, renal, bladder, gastrointestinal, etc.; and, of considerable importance, the operative procedures could be completed in one seance.

In accordance with these conceptions we have resected the celiac ganglia, broken up the sympathetic complex and denervated the aorta in 25 cases most of which were cases of malignant hypertension in an advanced stage.

The following observations summarize our experience to date in the surgical treatment of hypertension:

1. As stated above, in cases of early hypertension especially in young subjects the blood pressure falls to the normal level or becomes stabilized at a level lower than the preoperative level.
2. In cases in which the hypertension has been associated with other diseases which are due to a pathologic physiology of the adrenal sympathetic system good results are secured. The hypertension disappears together with the disease with which it is associated.
3. In regard to the more recently adopted procedure described above the following statements may be made:
 - a. During the operation in cases of malignant hypertension the blood pressure is reduced to or below the normal level.
 - b. The operation is performed in one seance.
 - c. There is but a slight degree of shock as would be expected since the operation is retroperitoneal.
 - d. Since the operation is performed in a painless area nitrous-oxid oxygen provides ample anesthesia.
 - e. It is still too early to offer any statement in regard to the post-hospital results. We

can say, however, that the clinical results during the post-operative stay in the hospital are better than those secured by our former procedures. During this period the blood pressure is more completely stabilized at a lower level and there is a greater improvement in the eye-grounds and in the kidney function as well as in the general well-being of the patient.

TUBERCULOSIS OF THE KIDNEY IN CHILDHOOD AND ADOLESCENCE

HERMAN L. KRETSCHMER, M. D.

CHICAGO

"The miliary type of tuberculosis seen in childhood as a concomitant to the rupture of a caseous gland in the course of a primary complex is no problem for the

ical consideration of this type from that above mentioned.

"The primary tuberculous lesion occurs with increasing incidence after the years of childhood pass. This is the result of a primary tuberculous infection which usually locates sub-pleurally and sets up a focal reaction. An abundance of lymph tissue in early life allows

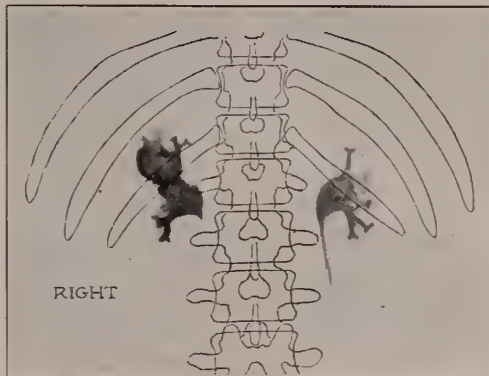


Fig. 2. Intravenous Pyelogram showing a normal pyelogram on the left side and the presence of a cavity on the right side.

of considerable lymph nodes swelling up and an associated para nodal inflammation occurs along with a stasis in the lymph draining the seat of the infection.

"Frequently enough, caseation is the resulting pathological trend in the lymph gland which, having become adherent to the adjacent vascular structures, may break through its limiting capsule. It may thus discharge its caseous contents into the circulation, pulmonary or systemic, to produce the miliary type of disease. This mechanism in later adolescence and adult life is not common."

This paper is based upon a series of 43 cases of renal tuberculosis which occurred in childhood and adolescence. (Adolescence may be defined as that period from fourteen in males



Fig. 1. Showing the presence of tuberculous hydro-nephrosis with stricture of the ureter below the transverse process of the fifth lumbar vertebra. The right pyelogram was normal.

genito-urinary surgeon, yet a mechanism of its production is here detailed to clarify the difference in etiolog-

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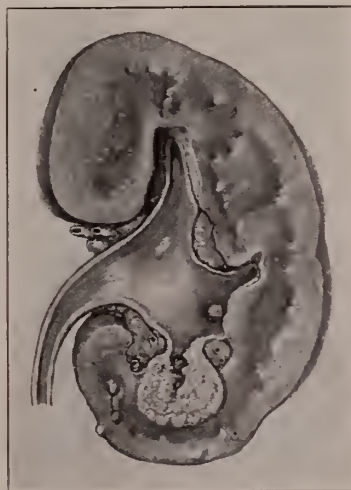


Fig. 3. Showing a large cavity in the lower pole and the presence of a few nodules in the cortex.

and twelve in females to the age of twenty-one.)¹

The statement that chronic renal tuberculosis is rare in childhood is one that has never been disputed so far as I know and has been emphasized by all authors who have written on this subject. Thus Beer,² in reporting his series of 280 cases of renal tuberculosis, reported one case between the ages of one and ten, 7 cases between ten and fifteen, and 22 cases between fifteen and twenty. Wildbolz,³ in his series of 245 cases, found 17 cases up to the age of twenty.

My own experience with cases of renal tuberculosis occurring during childhood and adolescence, which forms the basis of this paper, consists of 43 cases and they are presented in the following table:

TABLE 1

Age	Males	Females	Total Cases
4 to 10 years.....	1	3	4
11 to 15 years.....	7	4	11
16 to 21 years.....	17	11	28

This shows that 15 cases occurred before fifteen years of age and 28 cases between fifteen and twenty-one.

It is a well-known fact that in infants and children the common tuberculous lesion of the kidney is miliary tuberculosis, but this carries no interest from the urological point of view.

The following paragraphs are explanatory as to the reasons why the occurrence of renal tuberculosis in children is rare:

"Initial or primary infection with tubercle bacilli in the human being results in sensitization after a period of three to six weeks. During this primary development, the organisms may enter lymph channels, penetrate regional lymph nodes, and be disseminated by the hematogenous route throughout the body. The finer capillaries in terminal vascular structures permit of the filtration of these bacilli until the developing sensitization or allergy acts to fix the organisms in situ.

"Thus, if a clump of tubercle bacilli, acting as an embolus, is in the course of passing throughout the finer vascular structure of the kidney after the development of sensitization, it may become fixed—to proliferate later and cause renal tuberculosis. A similar distribution of tubercle bacilli may also occur with a loss of sensitization and development of anergy, permitting of an hematogenous invasion from a dormant or active disease in some other part of the body.⁴

Sex. The question of sex is not an important aid in the diagnosis of renal tuberculosis. Figures for large series of cases in adults vary, depending upon the type of material that the author reports. Naturally, from a gynecological

clinic, the female sex would predominate; whereas, in a urological clinic, where mostly male patients come for treatment and operation, the number of males would predominate.

In a previous study⁵ based upon 221 cases, including both adults and children, there were 55.6% males and 44.3% females.

In the present series of cases there were 25 males and 18 females, showing a slight difference in favor of males. On the other hand, in the cases that occurred in children of fourteen years or under there was practically an equal number of males and females (8 males and 7 females.)

Evidence of Tuberculosis in Other Parts of the Body

A careful history and a complete physical examination may often reveal evidence of a healed tuberculous lesion or perhaps the presence of an active one, either of which should arouse our suspicions, in a patient with urinary symptoms, that the patient may be suffering from a tuberculous lesion in his urinary tract and hence we should direct the examination with the possibility of renal tuberculosis in view.

The history of an attack of pleurisy with effusion or the history of a pulmonary condition that required sanatorium treatment, is of the greatest importance. The presence of enlarged glands or scars in the neck, associated with a history of long-continued suppuration, chronic bone or joint suppuration, or an ankylosed joint is of great importance and deserving of careful consideration in every patient with urinary symptoms or in cases with recurring attacks of pyuria or when silent pyuria occurs, i. e., in cases that persistently have pus in the urine but no urinary symptoms.

In males a most careful examination of the genital tract should be made and, although genital tuberculosis associated with renal tuberculosis in children is rare, nevertheless this fact does not justify failure to examine the genital tract. Examination of this series of cases showed the presence of tuberculous epididymitis or a history of a previous epididymectomy for tuberculosis in 4 cases.

Although a history of antecedent tuberculous disease in other parts of the body does not always mean that the lesion under consideration is a tuberculous one, nevertheless, if we bear these

facts in mind they will often be of great aid in leading to the correct diagnosis. Evidence of suppuration in a bone does not necessarily mean that the bone was the seat of tuberculous disease. That the lesion of the bone may be other than tuberculous and thus may lead to the wrong diagnosis has been my experience in one case, in which the diagnosis of renal tuberculosis was made before operation and at operation actinomycosis was found.⁶

In a certain number of cases data of this sort may be absent. However, may I call attention to the fact that in this series of cases evidence of tuberculosis elsewhere was obtained in 72% of the series.

The interesting thing about this group of patients who had tuberculous lesions outside the urinary tract is the fact that in almost all of them there was more than one distant lesion of tuberculosis. The location of the tuberculous lesions is given in the following table:

TABLE 2

Case No.	Sex	Age	Tuberculous Lesions		
			Outside the Urinary Tract		
1	F	4 yr.	Lungs.	Hip.	Glands in neck.
2	F	7 yr.	Lungs.	Spine.	Glands in neck.
3	F	9 yr.	Lungs.		
4	M	10 yr.	Knee.	Hip.	
5	M	12 yr.	Hip.	Calcified glands in chest.	
6	F	13 yr.	Lungs.		
8	F	14 yr.	Lungs.	Glands in neck.	
9	F	14 yr.	Lungs.		
11	M	14 yr.	Prostate.	Seminal vesicles.	
13	M	15 yr.	Abscess in gland in neck.		
14	M	15 yr.	Lungs.	Calcified glands in chest.	
15	M	15 yr.	Prostate.	Seminal vesicles.	Calcified glands in chest.
16	M	16 yr.	Calcified bronchial glands.		
17	M	16 yr.	Lungs.	Glands in neck.	
18	M	16 yr.	Knee.		
19	M	16 yr.	Lungs.		
21	F	17 yr.	Lungs.	Hip.	Abscess in elbow.
				Glands in neck.	
22	F	17 yr.	Hip.	Calcified glands in chest.	
24	F	18 yr.	Lungs.	Calcified glands in chest.	
25	F	18 yr.	Lungs.		
26	M	18 yr.	Prostate.	Seminal vesicles.	Calcified glands in chest.
27	M	18 yr.	Lungs.	Prostate.	Seminal vesicles.
				Epididymis.	
28	M	18 yr.	Epididymis (bilateral).		
30	M	18 yr.	Prostate.		
31	M	19 yr.	Lungs.		
32	M	19 yr.	Prostate.	Seminal vesicles.	Epididymis (bilateral).
36	M	20 yr.	Prostate.	Seminal vesicles.	
37	M	20 yr.	Lungs.	Prostate.	Seminal vesicles.
				Urethra.	Abscess in groin.
39	M	20 yr.	Lungs.		
41	M	20 yr.	Seminal vesicles.		
43	M	21 yr.	Prostate.		

One of the striking things about this series

is that in 7 of the cases, 16.27%, there was evidence of tuberculosis of the bones and joints, and in 16 cases, 37.2%, there was evidence of tuberculosis of the lungs.

Location. The question of whether the right side is more frequently involved than the left is of statistical or academic value only. Of greater importance than the question of which side is involved more frequently is the question whether or not there is bilateral involvement, since the presence of bilateral renal tuberculosis renders nephrectomy, with but rare exceptions, out of the question. One of the most important problems in every case of renal tuberculosis, therefore, is to determine the exact status of the opposite kidney with regard to freedom from tuberculosis, as well as to its functional capacity.

Formerly the general opinion seemed to prevail that renal tuberculosis was a unilateral disease. Recently, however, as a result of more careful study of these cases a good deal of evidence has been accumulated which shows that bilateral renal tuberculosis occurs more frequently than was heretofore believed.

My own experience in a previous study⁵ of 221 cases showed bilateral involvement in 19.3% of the cases. In a consideration of this question it is important to bear in mind the fact that in some instances an early lesion may have been overlooked in the opposite kidney; hence, figures for bilateral renal tuberculosis are more apt to be too low than too high.

In this series of 43 cases the incidence of bilateral involvement was 37.2% (16 cases).

Duration of Symptoms. It has long been recognized that renal tuberculosis is a chronic disease, that it runs a slow but progressive course, and that many times the disease is very far advanced when the patient presents himself or herself for examination.

The functional result, so far as a return to normal bladder function is concerned, is in most instances directly dependent upon the time that has elapsed since the onset of bladder symptoms and the time that the diseased kidney was removed by nephrectomy. In other words, the patient in whom the diagnosis is made early with only a moderate amount of bladder involvement or perhaps no bladder involvement at all, has a much better end result than the patient in whom

the diagnosis is made late and the bladder tuberculosis is extensive.

A review of the cases in this series was extremely interesting in that, although in some cases the interval between the onset of the symptoms and the time the diagnosis was made was relatively long, ten years in 2 cases, there were a great many patients in whom the symptoms were present for one year or less. The average for this group was one and one-half years.

TABLE 3

Onset of Symptoms	Cases	Percent
Under 6 months.....	17	39.5
6 months to 1 year.....	10	23.2
1 to 4 years.....	12	27.9
6 to 10 years.....	4	9.3

Symptoms. Although in rare instances urinary symptoms may be absent and in other cases the true nature of the illness may be masked by a superimposed acute infection, the fact remains that in most of the cases in this series bladder symptoms were present and predominated the clinical picture, and it was because of bladder symptoms that the patients were brought in or sought relief.

Some of the patients in this series were treated for various periods of time under the mistaken diagnosis of acute or chronic pyelitis because of recurring attacks of chills, fever, gastrointestinal symptoms and the presence of pus in the urine.

Every case of chronic pyuria that fails to respond to treatment should be given the benefit of a complete urological study to determine the underlying cause, and it is especially in this group of cases that careful and repeated search for tubercle bacilli should be carried out.

Urinary symptoms were present in the largest number of cases; they tend to increase in severity and they fail to respond to medical treatment. Of the various urinary symptoms encountered, frequency of urination heads the list and was present in 37 of the 43 cases (86%).

The frequency in most cases is due to the presence of tuberculous ulceration of the bladder and generally means that the renal tuberculosis has been present for a long time. In some cases frequency may be due to the fact that the patient has a contracted bladder, hence a limited capacity requiring frequent emptying.

In some of the early cases without bladder involvement the frequency may be due to a tuberculous pyelitis. And finally, in other cases

the frequency may be due to polyuria, it being a well recognized clinical fact that the tuberculous kidney often secretes large amounts of very pale urine, so that the mere increase in the urinary output may be responsible for the frequency.

Nocturia was the next most frequent symptom noted by the patients. It is a well-recognized fact that nocturia in children and young adults is suggestive of renal tuberculosis, other common causes of nocturia being diabetes mellitus and insipidus, and nephritis. Persistent nocturia should always arouse our suspicions; especially if the urine contains pus, should renal tuberculosis be suspected. Nocturia was present in 32 of the 43 cases in this series (74.4%).

The various symptoms present in this series are given in the following table:

TABLE 4

Symptoms	Cases
Frequency	37
Nocturia	32
Hematuria	24
Burning on urination.....	19
Pain on urination.....	16
Urgency	10
Fever	5
Enuresis	5
Headaches	5
Dribbling	4
Incontinence	4
Difficulty of urination.....	4

In a small group of patients there were no urinary symptoms and the diagnosis of urinary tract tuberculosis was established by finding tubercle bacilli in the urine. Especially should one be on the lookout in cases with a history of bone or joint tuberculosis.

It would seem that renal tuberculosis would rarely be confused with gonorrhea, yet in several of these cases a diagnosis of gonorrhea had been made and treatment instituted. Failure of the gonorrheal treatment, as carried out elsewhere, led to a complete urological examination that established the correct diagnosis. As an example of this kind I would like to present the following case:

Case 2. W. G., male, aged eighteen years. Admitted to the Presbyterian Hospital on February 24, 1936.

Complaints on admission were pain and burning on urination, nocturia and frequency, loss of weight, and hematuria.

At the time the patient's symptoms began, he sought relief at another hospital where a diagnosis of gonorrheal urethritis was made and he was sent to a venereal clinic. He denied venereal disease and was sent into the hospital for observation.

The *physical examination* was essentially negative, except for balanoposthitis, palpable glands in the inguinal region, and a hard, nodular prostate.

X-ray examination was negative for stone.
Examination of the urine showed albumin, blood, pus, and red blood cells.

Intravenous pyelogram on the right side showed clubbing of the calyces, dilatation of the pelvis, and dilatation of the upper half of the ureter. The left side was normal.

Cystoscopic examination showed an area of edema in the region of the right ureteral orifice. The left ureter was catheterized without difficulty or obstruction. On the right side the catheter met an obstruction about one inch above the bladder, above which point the catheter could not be advanced.

Urine from the right kidney had 2210 white blood cells, was sterile on culture and positive for tubercle bacilli. Urine from the left kidney had 27 white blood cells, was sterile on culture and negative for tubercle bacilli. Bladder urine had 790 white blood cells, was sterile on culture and positive for tubercle bacilli.

The *blood count* was 3,870,000 red blood cells, 8,600 white blood cells, hemoglobin 72%.

Blood chemistry showed urea nitrogen, 16.7; uric acid, 6.3; creatinin, 1.4; non-protein nitrogen, 36.4.

Operation. A uretero-nephrectomy was done on March 6, 1936. The kidney showed definite evidence of tuberculous disease.

Urinalysis. Routine examination of the urine in all patients with urinary symptoms cannot be emphasized too often, since it gives information of great value. Yet, how frequently one sees patients who have had urinary symptoms for a long time and who have had no, or at best, only a superficial, examination of the urine. Bearing out the statements just made, attention may be called to the results of the urinalysis in this series of cases; for, in each instance the urine showed deviations from the normal, and in 90.7% more than one pathological element was found and in some more than two were found. The most frequently-encountered positive test resulted from albumin in the urine. Blood—either gross, chemical, or the presence of red blood cells—was found in 33 cases. Pus occurred in 41 of the 43 cases.

TABLE 5

Urinalysis	Cases
Pus	41
Albumin	38
Blood	33
Casts	8
No analysis	1

Demonstration of the Tubercle Bacilli. The demonstration of tubercle bacilli in the urine is a relatively simple matter and when found clinches the diagnosis. Examination of the urine

for tubercle bacilli should be routine in every case of persistent pyuria in children and adults. In a certain number of cases careful search for tubercle bacilli, either in smears or guinea pigs, is rewarded by demonstrating their presence, often when their presence from the clinical picture is not suspected.

In many of the cases in this group a clinical diagnosis was made before the bacilli were demonstrated in the urine. The advantage of establishing a clinical diagnosis is the fact that it leads to repeated search for the bacilli even when the first reports are negative.

In this series of cases, direct smears were positive in 88.3% of the entire series. In 2 cases the pigs alone were positive (4.6%). It may thus be seen that the percentage of positive smears and pigs together totals 92.9% or, roughly, 93%.

Bacteriology. There is an old clinical dictum that a sterile pyuria means or is highly suggestive of urinary tuberculosis. This, I am sure, is familiar to all. It is a valuable point; however, we must bear in mind that there are exceptions to this rule. A careful review of the records in this series of cases showed that the urines were sterile in 19 cases, or 44.1%. In the following table is given the results of the cultures made:

TABLE 6

Growth of Culture	Cases
B. Coli	9
Staphylococcus albus	9
Staphylococcus aureus	2
Streptococci	2
Streptococci viridans	2
Streptococcus hemolyticus	1
Streptococcus fecalis	1
B. Mucosus Cap.	1
B. Pseudo diphtheria	1

Roentgenography. Roentgen-ray examination of the urinary tract should be carried out in every case presenting urinary symptoms, as well as in every case of pyuria. In cases of renal tuberculosis the examination in the largest number of cases is negative. In some instances it may show an enlarged kidney outline, and occasionally the presence of areas of calcification are demonstrated. According to Braasch,⁸ tuberculous shadows may be roughly classified under 3 groups: 1. multiple scattered small areas, 2. single or a few localized areas of one centimeter or more in diameter, and 3. large, irregular, diffuse areas involving either a large portion or the entire kidney. They generally occur in small

clusters and are irregular both in outline and density. Although in rare instances they may be relatively large, at times these shadows are so faint that they may escape recognition unless great care is used in reading the films.

Intravenous urography is especially desirable in infants and children and often gives very valuable information. We have never seen any untoward results in its use in infants and children. It is scarcely necessary to emphasize the fact that great care must be exercised as regards interpretation.

In the majority of cases the diagnosis can be made without resorting to the use of retrograde pyelography. However, in doubtful cases information is obtained that is of great diagnostic value.

Hinman⁹ has again called attention to the fact that retrograde pyelography is not without risk and Kearns¹⁰ states that it is needless, unreliable, and dangerous.

Cystoscopic Findings. The cystoscopic findings in cases of tuberculosis of the bladder secondary to renal tuberculosis are well recognized. Indeed, they are so characteristic that the diagnosis of tuberculosis is self-evident. The changes vary in extent and degree and they vary from slight changes around the ureteral orifice to extensive ulcerations; in others, there is extensive involvement of the bladder wall and a contracted bladder, with a limited bladder capacity making cystoscopy difficult and painful, so that in some, sacral or general anesthesia is required. Extensive bladder tuberculosis means far advanced renal disease as a rule, excepting that group in which the bladder involvement is secondary to tuberculosis of the prostate or seminal vesicles.

Catheterization of the ureters is carried out for two purposes; 1. to demonstrate the origin of the tubercle bacilli found in the mixed specimen, whether from one or both kidneys; and 2. to determine the functional capacity of the normal kidney. Occasionally, difficulty may be experienced in catheterizing the ureter of the diseased side because of the presence of strictures of the ureter due to tuberculosis of the ureter.

In 34 cases the cystoscopic examination showed definite evidence of tuberculosis of the bladder, and in the largest number of these cases the tuberculous disease was extensive and

very advanced, meaning that there was a long-standing disease of the kidney. In 6 cases that were examined relatively early after the onset of the symptoms the cystoscopic examination was negative, that is, there was no evidence of the tuberculous disease in the bladder. In some of the cases of severe and extensive bladder tuberculosis, catheterization was impossible.

TREATMENT

The treatment of unilateral renal tuberculosis is surgical, after the opposite kidney has been carefully studied as regards its freedom from tuberculosis and its functional capacity.

The usual program employed in the treatment of pulmonary tuberculosis: namely, rest, feeding, fresh air and sunshine, is of no avail so far as affecting a cure for renal tuberculosis is concerned. Attention may be called to the fact that the kidney cannot be put at rest.

Bilateral chronic renal tuberculosis is not a surgical condition. Removal of the more extensive of the two kidneys has no effect on its tuberculous mate. In those rare instances in which a patient suffers from septic manifestations due to a tuberculous pyonephrosis, nephrectomy may be indicated as a life-saving measure even when the opposite kidney is the seat of tuberculosis.

Of this series of 43 cases, nephroureterectomy was carried out in 23 of them. There were no operative deaths.

Attention may be called to the importance of the post-operative program to be carried out after the patient has left the hospital.

122 S. Michigan Ave.

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DISCUSSION

Dr. Frank N. Evans, Springfield, Ill.: This subject of renal tuberculosis I think has been beautifully presented by Dr. Kretschmer. I was very surprised at the number of young individuals he had in whom he had

discovered renal tuberculosis. When we consider that 95% of us are infected with tuberculosis before the age of two years, it is surprising that more cases of renal tuberculosis do not occur. It might explain a good many of the recurrent pyelitis cases in children. I know his paper is going to make us recheck more carefully those cases that come back. We were told that the urine in renal tuberculosis was acid. That is not always true. We have all been taught that colon bacillus did not occur until late. Dr. Kretschmer showed a chart in which 19 out of 43 cases had mixed organisms.

I think one should take a little time to make a diagnosis. There are a lot of things you should do. While working out the urine, you should give an intradermal test. You generally get a "plate positive" chest in renal tuberculosis. There are a few cases of non-specific urethritis that have been reported as being tubercular. I read about six weeks ago an article in which the man reported five or six cases which proved to be tuberculous. It is just a little thought regarding so-called non-specific urethritis.

LOW DOSAGE IRRADIATION OF THE PITUITARY AND ADRENALS FOR THE TREATMENT OF NON- NEPHRITIC HYPERTENSION

JAMES H. HUTTON, M. D.

and

EARL E. MADDEN, M. D.

CHICAGO

Non-nephritic and essential hypertension are not good terms for this condition as they only call attention to our ignorance. While hypertension may exist without demonstrable arteriosclerosis or nephritis, if the hypertension is not checked, sooner or later both of these conditions appear. Whether they are the result of the long continued hypertension or of the same etiological agent which initiates it has not yet been determined.

Adson¹ says that "etiologically, essential hypertension is probably due to a fault in the neurogenic-endocrine vascular mechanism." Placing the responsibility on a "neurogenic-endocrine vascular disturbance" may be more comprehensive than allocating all of the blame to the pituitary and adrenals, but it should be remembered that these two are more intimately related to, and exert more influence upon, the autonomic system than any of the other endocrines. There is a voluminous mass of literature

supporting the idea that the pituitary and adrenals are responsible for this syndrome. Most of this evidence is presented as favoring the view that one or the other of these structures is at fault and takes no notice of the fact that they are so intimately related that one could hardly be involved without implicating the other. The high points in this evidence may be briefly summarized as follows:

1. Both glands normally elaborate a secretion which increases blood pressure and blood sugar.

2. Hyperfunction of the pituitary, whether associated with eosinophilic or basophilic adenoma, is frequently accompanied by hypertension and hyperglycemia.²

3. Kylin³ demonstrated a parallelism between the amount of gonadotropic principle excreted in the urine and the height of the blood pressure. It is true that Scarf and Israel⁴ proclaim their inability to verify Kylin's findings, but in most of their cases one could doubt the accuracy of their diagnosis of essential hypertension.

4. Kraus⁵ found an increased number of basophils in the pituitaries of patients with hypertension. This finding has been confirmed by others.^{6, 34} Its significance, however, is questioned.

5. Hypophysectomy is followed by low blood pressure, low blood sugar, increase in glucose tolerance; clinical hypo-pituitarism is associated with the same phenomena in lesser degree. The same is true of hypoadrenia.

6. Schaefer⁷ reports a series of cases of hypertension developing at the menopause which were relieved by injections of theelin. This substance probably has a depressing action on pituitary and adrenal function as indicated by the work of Barnes, Regan and Nelson,⁸ Mazer⁹ says: "The symptoms of the menopause, other than cessation or irregularity of menstruation, are eminently pituitary, thyroid and adrenal in origin, coupled with a marked instability of the autonomic nervous system."

7. Tumors of the adrenals, presumably accompanied by hyperactivity, are associated with hypertension¹⁰⁻¹³ and hyperglycemia.^{14, 15} Those involving the medulla are thought to be associated with the paroxysmal type of hypertension, while adenomas of the cortex are reported to be accompanied by constant hypertension. It should be recalled that a syndrome closely resembling

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pituitary basophilism has been found in association with adenomas of the adrenal cortex.¹⁶

8. Increased amounts of adrenalin are said to have been demonstrated in cases of essential hypertension.¹⁷

9. There is an increasing appreciation of the effects of emotion on hypertension. It is almost certain that the evil effects of emotion are mediated through the adrenals via the sympathetic nervous system. Sullivan¹⁸ includes essential hypertension among the psychosomatic disorders.

There is evidence that a disturbance of carbohydrate metabolism occurs in a considerable percentage of victims of hypertension.^{19, 20} In this series we have done glucose tolerance tests on 93 patients. Of these, 58 patients exhibited a high sugar curve during the test. Glycosuria occurred in only a few cases. More than ten per cent. of our patients had both hypertension and diabetes. In some cases the diabetes came first and the hypertension later and in others that order was reversed. Davis²¹ questions whether the pancreas has an independent control of carbohydrate metabolism and thinks it would be strange if nature gave exclusive control of such a vital function to one organ. There is abundant evidence that pituitary and adrenals play an important part in carbohydrate metabolism.

The treatment of this series of cases was begun in the belief that essential hypertension and diabetes were due to some functional abnormality of the pituitary or adrenals or both, which could be corrected by very small doses of the x-ray. The harmlessness of the procedure had been demonstrated, long before we used it, by the much larger doses used in the treatment of pituitary tumors without any damage having been reported to the intracranial structures. Pfahler and Spackman²² gave to a girl 8½ years of age 4000 R measured in air between May 9, 1930 and June 25, 1931. A man was given 2000 R within a period of one month. The experimental physiologists had used many times the dose we employ, concentrating them on one adrenal after removal of the other, without damage.²³ The doses we use in this work are even smaller than those employed by the dermatologists.

Both sides of the pituitary and the adrenals

are irradiated at each treatment. The results are better than when only one structure is irradiated at a time. The present factors are as follows: 120 kilovolts, 3 milliamperes, 2 mm. aluminum filter, 50 cm. skin target distance, 5 minutes, delivering 50 R units. Each side of the pituitary is treated through a portal 10x10 cm. and the adrenals through a common portal 15x15 cm.

In a few instances we used larger doses consisting of the following factors: 180 kilovolts, 6 milliamperes, 1 mm. aluminum and .25 mm. copper filter, 50 cm. skin target distance, 15 minutes, 199.5 R units. While this is not a heavy dose, it was almost invariably followed by an unpleasant reaction characterized by headache, vertigo, weakness and occasionally nausea. In only one or two instances was any appreciable effect on the blood pressure noted. Not only are small doses safer but they are much more effective. Doses large enough to be dangerous are ineffective. This is true not only in our work but also in that reported by others.²⁴ Men who have reported using this therapy without success have in every instance that has come under my own observation used large doses or repeated the treatment too frequently.

Harrison,²⁵ discussing the fall in blood pressure noted after irradiation of the parotid sinus, says: "Should the dose be excessive an increase instead of a diminution in the hypertension occurs, but when the proper dose is administered the blood pressure falls shortly after treatment and the fall continues to increase for the succeeding 24 hours. The action is due probably to the effect which the carotid sinus has on the secretory function of the adrenals."

During the progress of this work Barnes²⁶ studied the effect of irradiation of the pituitary and adrenals on the carbohydrate metabolism of pancreatectomized dogs. He showed that this procedure was regularly followed by an improvement in carbohydrate tolerance in these totally diabetic dogs. Their insulin requirement was reduced about fifty per cent. Barnes is of the opinion that irradiation of the adrenals was the most effective part of the procedure in such instances.

This effect cannot be regularly duplicated in human diabetics. About one-third of our cases appeared to benefit in no way from irradiation;

another one-third noted symptomatic improvement with but little change in their carbohydrate tolerance; while the remaining one-third experienced symptomatic relief and marked improvement in their carbohydrate tolerance. The response of the human animal did not occur with anything like the regularity noted in dogs.

Our experience in the treatment of patients having both hypertension and diabetes is exhibited in Table 1.

TABLE 1.

Both conditions improved.....	7
Hypertension improved	8
Diabetes improved	5
Insufficient treatment	7

27

Of the 20 patients to whom we were able to give an adequate amount of treatment, 7 exhibited improvement in both conditions, 15 experienced improvement in the hypertension and 12 experienced a notable improvement in their diabetic state.

Our experience in the treatment of patients with hypertension alone is summarized in Table 2.

TABLE 2.

Improved	123
Unimproved	53
Insufficient treatment or can't be followed.....	59

234

A number of men in other parts of the country have used this therapy in hypertension. Their reports which were kindly sent me are summarized in Table 3.

TABLE 3.

	Cases	Cases Improved
Martin	100	80
Baker	40	30
McGuffin	40	30
Finch	12	9
Konantz	6	3
Parkhurst	5	3
Hadley	4	4
Miscellaneous	56	47
	263	206

By improved we mean not only symptomatic improvement but a reduction in blood pressure readings from 25 to 100 points. As has been stated elsewhere,³⁵ in some cases the systolic is much reduced while the diastolic is but little changed. In others this is reversed; the systolic shows but little change, while the diastolic falls to approximately normal figures.

In some cases a few treatments appeared to be sufficient; in others there was no response until after a number of treatments had been

given. In a few there has been no response at all. Another group appeared to need further treatment at irregular intervals in order to maintain their blood pressure at desirable levels.

The only surgical procedure which seems to offer more hope than irradiation is splanchic section with removal of the first and second lumbar ganglia and partial section of the adrenals. Undoubtedly some cases of hypertension are associated with adenomata of the adrenals. Such cases would be better served by the operation just mentioned. We believe that such cases can now be recognized with a sufficient degree of certainty to warrant referring them to the surgeon. The following indications point in that direction:

1. Malignant hypertension. (This should always arouse that suspicion).
2. Hirsutism in females. Such women usually have a very heavy head of hair, which is coarse and harsh.
3. Menstrual disorders, particularly amenorrhea or dysmenorrhea.
4. Retinal lesions.
5. Small sella.
6. Young patients.
7. Slight response or lack of response to small doses of irradiation.
8. Intravenous urography would offer some evidence if the adenoma was of sufficient size.

A patient presenting these signs and symptoms should very seriously consider an exploration of the adrenals with the thought that adenomata may be discovered and removed.

An example of this was Mrs. O, aged 41 years, referred by Dr. G. G. Dowdall. Her hypertension had been discovered four years previously during the latter months of pregnancy. She had four living children aged 4, 15, 19 and 21 years. The menstrual periods began at 14, were still occurring regularly at 28-day intervals, lasted 4 to 5 days and were not accompanied by pain. Past and family history was otherwise without significance.

Temperature 99.6; pulse 100; blood pressure 260/145. Her complexion was florid. She had a heavy hair suit, heavy eye brows, male type of pubic hair and considerable hair about the nipples, chin and upper lip. Her eyes were prominent. The conjunctivæ were inflamed. The B.M.R. was minus 5%, although the picture was highly suggestive of hyperthyroidism and that diagnosis was tentatively made at the hospital.

There was little response to x-ray treatment the few months she was under observation. One year later when she again came under observation her blood pressure was only slightly lower than when she was first seen. The

B.M.R. was plus 55%. She died on January 15, 1936, of myocardial failure. The autopsy showed multiple cortical adenomas of both adrenals, hyperplasia of the hypophysis and thyroid. This woman had much heavier doses of irradiation than are ordinarily employed. There was no sign of x-ray damage to the pituitary or adrenals.

Adson¹ and Peet²⁷ have noted the same phenomenon following their operations that we have noted following irradiation; the symptomatic improvement is out of proportion to the drop in blood pressure. We have noted symptomatic relief even when there was little or no drop in blood pressure. If there was a secondary rise in blood pressure, this was many times not accompanied by any return of symptoms.

The surgeons noted improvement in retinal lesions, particularly spasm of the arteries. This has also been observed following irradiation, as exemplified in the following case history:

Mrs. B. referred by Dr. John F. Krumm, was 40 years of age and had known of her hypertension for about 10 years. She complained of violent headaches and blurred vision and had had two light strokes during which her speech was affected. She was admitted to the hospital a few days after the occurrence of the last stroke, at which time her vision was so poor that she was unable to read the newspaper, even with glasses. There was general weakness with inability to walk. Her blood pressure was 240/150 right and 236/146 left. Her eye condition was reported by Dr. Hiram J. Smith as showing perivascular hemorrhages, cotton wool exudates, especially about the macular region and near the disc, "a typical picture of cardiovascular fundus, neurorinitis." After three treatments she was able to read with the aid of glasses, and her speech returned to the point where there was only a slight slurring. Her renal function on admission showed a return of 30% of the dye in 2½ hours. After a few treatments the dye excretion amounted to 60% in 2 hours. The last blood pressure reading was left 180/115 and right 200/125. She was able to read fine print without glasses. She states that as her blood pressure rises her vision becomes more impaired.

Even when no retinal lesions are observed, hypertension patients are troubled at times by blurring of vision. This symptom is almost invariably relieved.

Adson¹ notes that patients developing symptoms in the third and fourth decades of life and belonging to the class of benign or early malignant hypertension respond more favorably to surgical procedures. This is not entirely true in our series, as we have had very favorable results in patients who developed hypertension in their sixties. Their symptomatic relief and fall in blood pressure was quite equal to that seen

in younger patients. Some of our most unfavorable results have occurred in women in their thirties and forties.

An example of this is Mrs. X, aged 34, referred by Dr. Hubert M. English. Her hypertension had been discovered 10 years before. She complained of headache, precordial distress, palpitation and lack of endurance. The blood pressure was 260/155 right and 260/140 left. She had a rather swarthy complexion and a heavy hair suit. The sella was quite small. She had more than twenty treatments. Her last blood pressure reading was 195/105 right and 195/110 left. This shows a considerable reduction, but there was so little symptomatic response that she has never been put on the improved list. It is felt that she offers considerable evidence that her trouble is due to hyperplasia or adenoma of the adrenals.

Peet²⁸ says that severe kidney damage in the absence of a high non-protein nitrogen is not a contraindication to operation. While this is not a contraindication to x-ray therapy, we do not expect this method of therapy to produce more than symptomatic improvement. The blood pressure may drop considerably, but we seriously doubt whether the course of the disease is materially altered in such cases.

We treated one patient with cerebrospinal lues. He experienced neither symptomatic relief nor fall in blood pressure. Another man had syphilitic aortitis. The blood pressure promptly returned to normal levels after treatment but there was no relief of the symptoms due to the luetic condition.

Naturally the same principles govern the prognosis in this as in other therapeutic measures. The earlier the case is seen and the more persistently and intelligently it is treated, the better the outlook. When a new type of therapy is introduced, it is usually applied first to far advanced and hopeless cases where no reasonable prospect of improvement exists. Some of the failures reported have occurred in such cases.

Undoubtedly some of the phenomena following irradiation are mediated through the autonomic nervous system. The improvement in the texture of the skin could hardly be brought about otherwise. Langer²⁹ pointed out that irradiation of the sympathetic chain relieved dermatoses of various kinds. He mentioned specifically eczema, pruritus, lichen planus, psoriasis, ichthyosis and herpes zoster. Harrison³⁰ in discussing irradiation of the adrenals, lists the following conditions as having been benefited by that procedure; endarteritis oblit-

erans in which gangrene was threatened as a result of spasm rather than of actual occlusion of the vessels; threatened obliteration of the arterial supply of the lower limbs as a result of spasm in association with general diseases such as diabetes; senile arteritis and intermittent claudication; cases of painful osteoporosis. He says that the ability to influence the deposition of calcium in this manner led to the use of this method of treatment to increase the deposit of calcium at the site of old ununited fractures. We noted the healing of a gangrenous area on the toe of a diabetic after irradiation of the pituitary and adrenals.

Nervousness, irritability, tenseness and restlessness are almost invariably relieved. Patients claim that strength and endurance are increased and precordial distress is usually relieved. Many patients say that they are more clear-headed and able to work more efficiently. Dr. H. D. Parkhurst³¹ of Utica, New York, quotes one of his patients as saying after x-ray treatment that he could think faster and had more speed in his legs.

A considerably elevated B. M. R. has been noted in a number of cases. These have responded favorably to treatment and the B. M. R. has declined to nearly or quite normal levels. One of these cases had had two subtotal thyroidectomies at intervals of a year and a third recommended just before she came under observation. She had the usual symptoms of hyperthyroidism and a B. M. R. of plus 56%. After six treatments the blood pressure declined from 205/75 to 135/85 and the B. M. R. was plus 18%. At the present time, 17 months after the last treatment, the blood pressure is 155/90 left and 165/90 right. The B. M. R. is plus 14%.

Dr. J. V. Fowler³² reports the case of a young man who had had a subtotal thyroidectomy in 1926, another in 1927, a third in 1929 and a fourth in 1934. The toxic symptoms promptly reappeared after each operation. Three treatments to the pituitary and adrenals, December 21, 1934, January 7 and 14, 1935, were followed by such rapid and marked improvement that he was able to return to work.

There are certain precautions that should be observed in the use of this type of therapy. Small doses should be used. We prefer to use the

technic already described. McGuffin³³ reports favorable results with 200 KV but he delivers only about 50 R units per area treated. Treatment should not be too frequently repeated. If the blood pressure shows a considerable drop after one treatment, another should not be given until either (a) the blood pressure begins to rise, or (b) it is evident by a number of observations at three to four day intervals that no further fall can be expected and the blood pressure has not yet reached a satisfactory level. Treatments should not be administered during or within a week before a menstrual period. Treatments given at such times are almost invariably followed by a rise in pressure and an exacerbation of symptoms, particularly headache.

To repeat, while the symptoms may be relieved, if the hypertension has progressed to the point of nephritis, it is obviously unreasonable to expect any notable reduction in blood pressure or material alteration in the course of the disease, although it is not unusual to note some improvement in renal function following treatment, as indicated in Dr. Krumm's case.

Harrison³⁰ makes the following statement with which we fully agree: "Irradiation will help to avoid unnecessary operations on the sympathetic nervous system and operative interference should not be attempted until the effect of irradiation has been first definitely established. It is highly probable that the operation will prove ineffectual if irradiation has failed to secure any improvement." We would add that treatment is much more effective when the pituitary is irradiated at the same time as the adrenals.

We are indebted to Dr. Dowdall and Dr. Culpepper for their encouragement and cooperation and we have been allowed to include in this report cases from the services of Dr. LeRoy H. Sloan, Dr. E. C. Olson and Dr. Louis G. Singer, 30 North Michigan Ave.

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DISCUSSION

DR. HERMAN H. COLE, Springfield: Anyone who can offer us anything that will, in some measure, add a few years of life or a few years of comfort to our people above forty who develop these hypertensive diseases, I think should be welcomed with open arms. I feel very sure that our patients of thirty-five or forty, or above forty, who ultimately have trouble of this character or of a similar nature, will certainly welcome such a treatment.

Whether we regard chronic hypertension as a primary disease of the endocrine system, whether we regard it as a combined disturbance of the endocrine system with the autonomic nervous system, or whether we regard it as a capillary sclerosis, or selective nephritis, does not make a great deal of difference, provided we secure results.

As Dr. Hutton has told you, there are probably a great many difficulties in the way of the man who selects his case. Of those we see, there are a good many who have defined sclerosis in the kidneys or definite sclerosis in the peripheral arteries, and in this type of patient one cannot expect the type of result that Dr. Hutton expects.

I have only had a small number of cases treated with this method. Two of those have died, one by stroke and one by the cardiac route. One of them is still under treatment, which leaves three completed cases fit to report. Two of these three are very definitely improved, and I have been highly satisfied with the result. The other I am not satisfied with but there has been symptomatic benefit.

One case in particular which started with a blood pressure of 260/135 has obtained, I believe, one of the most remarkable results that a person could ask for. The blood pressure at the present time, after a year and a half, remains below 200 systolic and below 100 diastolic, with practically all symptoms disappeared. I regard the drop in blood pressure as definitely due to treatment. I do not think it is due to a cardiac failure and all of the symptoms have practically disappeared.

As Dr. Hutton has told you, he is offering this as symptomatic relief, possibly more. I believe it should be welcomed with open arms and tried. Personally, I intend to use a good deal more of it than I have, as the patients come in that I can pick out in which I feel justified in using this method. I sincerely hope that Dr. Hutton will go further with this work and will be able in time to give us something that we can use.

DR. HUTTON: (Closing Remarks): I am glad to have Dr. Cole's report that his patient is still in good condition.

I should like to urge men to interest themselves in this type of therapy. It is as safe as any yet offered. It promises more than any other type of therapy including the surgical procedures. Series of treatments

can be repeated indefinitely if one is not successful. If the patient finally elects to adopt a surgical procedure, nothing has been lost by having used x-ray therapy.

With the number of cases that have been subjected to this type of therapy now running well up toward 600 and with men using this type of therapy reporting about the same experience the country over, it seems fairly certain that about three out of four victims of essential hypertension can expect symptomatic relief and a material reduction in blood pressure from this treatment. It can be given to a patient in or near his own home town; there is no occasion for traveling long distances, for hospitalization or for losing time from work during the treatment. It is simple, safe, convenient and, when used with care and intelligence, promises much for the patient.

A NEW ELECTRIC STETHOSCOPE AND STETHOGRAPH

(Phonocardiograph)

Preliminary Report

JOSEPH K. NARAT, M. D.

CHICAGO

According to the available literature, attempts to amplify and register heart sounds date back to 1856, when Donders¹ suggested a crude method of marking the sounds. Various motives account for the numerous efforts in this field. They may be grouped as follows:

1. Auscultation, which renders an immense service in the diagnosis of heart diseases, has inherent drawbacks of every subjective method of examination. The modern scientific research strives to supplement tests subject to a personal equation by objective methods of precision. Thermometer, sphygmomanometer, hemoglobino-meter, basal metabolism apparatus may be cited as examples. In heart disease the situation is complicated by the fact that the customary descriptive terms of various murmurs do not define them in satisfactory manner. Desirability of graphic records becomes obvious.

2. A comparison of records made at certain intervals from the same patient offers an opportunity to study the evolution of the condition and the effect of therapeutic measures.

3. Rare cases can be recorded and compared one with another. An opinion can be formed as to the constancy or variability of certain phenomena.

4. The great didactic value of a sound re-

cording apparatus does not require any explanation. Some devices allow a simultaneous auscultation of the heart sounds by the instructor and the student, so that an immediate comment can be made.

5. Feeble murmurs or those unrecognizable with an unaided ear can be graphically reproduced; for instance, the premature first sound found in hypertension with incipient decompensation.² In mitral stenosis frequently no distinct apical diastolic murmur can be heard on account of the low fundamental frequency of the sound.³

6. Sound recording devices allow exact determination of time relations between the sounds of the cardiac cycle and also between normal and pathologic sounds. Such analysis, of academic or practical interest, throws light on many obscure problems, such as physical characteristics, mechanism and pathogenesis of abnormal sounds. Sounds of premature contractions and reduplication can be distinguished.⁴ The onset of the isometric contraction phase of the systole can be precisely located.⁵ Opportunities are offered for chronometric studies, i. e. measurement of duration of sounds and murmurs. Graphic recording allows differentiation of various types of the gallop rhythm; a correct diagnosis is important as various types have an entirely different clinical significance.^{6,7,8,9} The importance of the ventricular factor in the production of the auricular phenomenon encountered in the Adams-Stokes syndrome has been demonstrated on the basis of phonocardi-



Fig. 1. External View of the Sound Recording Device.

graphs.¹⁰ The characteristics, mechanism of production and diagnostic importance of the opening snap in mitral stenosis have been studied with the same method.¹¹ An explanation of the mechanism of the second split sound has been offered.¹² The interpretation of the arterial and venous pressure curves is greatly facilitated by simultaneous recording of heart sounds.¹³

7. An electric stethoscope finds its application in surgery. The heart sounds of the patient can be amplified and made audible or their record visible during operations. Such observations may advantageously supplement the watching of the respiration and blood pressure.

8. In obstetrics the apparatus can be used for an early detection of pregnancy as the fetal sounds and the placental souffle can be greatly amplified. During deliveries the fetal sounds can be made audible by means of loudspeakers or their records can be projected on a screen and watched continuously.¹⁴

9. Primarily designed for registration of heart sounds, the apparatus can be used also for recording respiratory sounds. Such analyses already furnished practical results by offering suggestions as to the best method of percussion.^{15, 16}

10. The device has many other applications. For instance, it enabled a French writer¹⁷ to describe two distinct sounds produced by percussion of the abdomen in ascites. It may be used for investigations concerned with the action currents in muscles or nerves.

To summarize, one may say, that a phonocardiograph has not only a scientific but also a great practical value because it facilitates the diagnosis and prognosis of many conditions and allows a check-up on the therapeutic effects.

The limitations set for this paper do not allow a review of the evolution of the sound recording apparatus. The impetus was given by Einthoven, father of electrocardiography.¹⁸ Greatest strides have been made since the development of the radio. As to the pick-up, soap films, membranes made of collodium, gelatine or rubber have been replaced by carbon, ribbon, moving coil, condenser or crystal type microphones. The amplification was gradually raised to four stages. Lesser advancement can be noticed in the recording part of the devices. Instead of a capillary electrometer, various types of galvanometers or

oscillographs are being used and photographic cameras employed. The following countries deserve the greatest credit for development of devices for recording heart sounds: Holland,¹⁸ England,^{19, 20} Germany^{1, 2, 12, 15, 16, 21} Austria,²² Hungary,²³ Switzerland,^{8, 10} France,²⁴ Russia,²⁵ Argentine,⁶ Poland²⁶ and last but not least, our own country.^{3, 4, 9, 27-33} This list is by no means complete. All the apparatus are still confined to special research laboratories because they are bulky, expensive, complicated and often inaccurate.

I have the honor to present a new electric stethoscope and stethograph designed and developed by Mr. John Yonkers of Evanston, Ill. This apparatus offers the following advantages:

1. Compactness and small weight. The apparatus is truly portable.
2. Excellent fidelity.
3. Ease in handling. No adjustment, calibration, standardization or focusing is required.
4. Sturdiness, allowing transportation and limiting repairs to a minimum.
5. No batteries. An electric outlet, furnishing an alternating current is sufficient.
6. Low cost of the apparatus and its operation. No darkroom is required for development of films.

7. Direct registration without the use of a photographic camera. Numerous new features are incorporated in the apparatus. A specially designed, so-called contact crystal microphone is superior in many respects to the diaphragm type microphones. It offers the following advantages: (a) Freedom from inherent noises, (b) Excellent frequency response, (c) Extreme lightness of weight, (d) Ruggedness, (e) Where the contact crystal is used audio regeneration is minimized, (f) The contact crystal picks up less outside noise. A specially built amplifier is extremely compact; all frequencies above 2000 cycles are eliminated. This reduces interference from undesired sounds and permits a more perfect recording of heart sounds. The recording heads are of the permanent magnet armature type operating from the output of the two amplifiers, one for the heart sounds, and the other for arterial pressure. The armature has an extended arm fitted with a set screw holder for the stylus. Faithful image of vibrations is furnished by minute excursions of the writing point, thus

overcoming the disturbing features of inertia. The record is made on an uncoated cellulose acetate film. The stylus engraves the record on the surface of the film. The latter is moved by a special synchronous motor maintaining an absolutely constant speed. The optical system throws the enlarged image of the record on a viewing screen on which the time coordinates are marked. Photographic copies of any portion of the record can easily be obtained by simply placing photosensitive paper against the screen. The curve projected on the screen can be observed during the recording process, allowing a selection of the best location for an optimal pressure on the microphone. Headphones permit a simultaneous auscultation by two individuals before, during or after the recording process. Such device is highly desirable for didactic purposes or to overcome difficulties offered to the auscultation with the customary stethoscope: obese patients, impairment of hearing, etc.

The purpose of the apparatus is not to substitute but to supplement the time-honored methods of inspection, palpation, percussion, auscultation, electrocardiography, etc. It is hoped that the phonocardiograph will contribute to the advancement of our theoretical knowledge and will enrich our armamentarium in the fight against heart diseases.

A historical summary, a more detailed description of the apparatus and a more complete bibliography will soon be published.

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DISCUSSION

Dr. E. M. Stevenson: Dr. Narat's paper brings to my mind three questions of major importance: first of all, the need for such an apparatus; secondly, the application in the practice of medicine outside of teaching institutions and for didactic purposes; third, the cost and the maintenance.

In answer to the first question, may I say I feel there is a need for such an apparatus. This statement is borne out by the fact that as long ago as 1836 the

first attempt was made to perfect an electrical appliance whereby heart tones could be amplified, and at the present time, in the current literature, there are over 200 references to this particular subject.

The amplification of heart sounds in the realm of cardiac pathology permits of the detection of early cardiac disease which might otherwise be overlooked. Any apparatus which will permit the physician to institute proper therapy and to offer a prognosis to the patient and patient's family, where before he would have to wait for the audible evidences of heart disease to present themselves, is justified.

It is further made practical by facilitating auscultation under circumstances which may interfere with our ability to recognize or diagnose heart disease. Many times we see obese patients in whom we are not sure whether a murmur exists or not. Often the examining environment is such that we are not sure even of audible murmurs. The stethograph obviates this problem.

It seems to me that it is a solution for the man who is not trained in cardiology, and it certainly should be of definite benefit to the individual who has some impairment in hearing.

The application of the stethograph in the practice of medicine is valuable from the standpoint of diagnosis and prognosis. This apparatus which Dr. Narat has so ably described seems to me to obviate the observation of respirations, the recording of blood pressures and the auscultation of the heart during surgical manipulations of any kind, even in obstetrics.

It has a practical application in the office of the man doing general work by permitting of a permanent record, both for the information of the physician and the patient, and by virtue of its permanency, permitting comparisons to be made on findings from time to time.

It is of further value for men doing work for insurance companies, particularly when the question of insurability or disability in regard to the cardiac problem arises.

In addition, a surgeon is able to listen to the heart murmurs of his patient during the course of any major surgical procedure.

I am not privileged to make a statement in answer to the third question of cost and maintenance, but the essayist assures me the apparatus will be well within the reach of all who are interested. The machine itself is light. It is entirely portable. The simplicity of construction, the ease with which parts may be replaced, if and as necessary, and the elimination of camera and dark room, certainly speak well for a minimum in maintenance.

I certainly believe that a stethograph has a place in the practice of medicine as a supplemental aid, particularly in the field of cardiology.

I feel that Dr. Narat deserves considerable credit for having called our attention to a simple, less expensive, entirely practical form of apparatus which will enable all of us to further study our cardiac problems more efficiently.

I want to express my appreciation to the essayist and to the Chairman of the Section for the privilege of discussing this paper, for I feel that the essayist has provided us with a simplified and valuable adjunct

in the diagnosis and prognosis and in the therapy of heart disease.

Dr. Narat: (Closing remarks) The apparatus described is not a substitute for the electrocardiograph. Both devices supplement each other. The stethograph is particularly valuable for the diagnosis of valvular lesions in which the electrocardiograph frequently does not furnish any information. The handling of the stethograph and the interpretation of the records are very simple. However, it is not the apparatus but the physician who makes the diagnosis.

VARIOUS ANESTHETIC AGENTS, ESPECIALLY SOME NEWER PREPARATIONS

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INHALATION ANESTHESIA

Inhalation anesthesia has been widely used and has been the method of last resort when other methods have failed. It is the method which usually comes to mind first when the word "anesthesia" is mentioned. The clinical use of many agents could be discussed but I prefer to limit my discussion to those that are of most clinical value. I shall not discuss chloroform, which is still used for obstetric analgesia in many places, nor shall I discuss ethyl chloride as a general anesthetic agent although it is used a great many times, especially for anesthesia of short duration. Anesthetists who administer ethyl chloride by the semi-open drop method find it useful in selected cases for certain purposes.

On the whole, ether, administered by the open drop or semi-open drop method, is still the anesthetic agent of greatest general usefulness in the hands of the average anesthetist. I believe its use is sufficiently well understood that I need not go into detail about it, except to say that I find, in the average case, that it is advantageous to administer atropine for drying of secretions and to give small amounts of a barbiturate the night before, and the morning of, operation. On the other hand, the use of morphine and barbiturates has resulted, in a very few instances, in such depression of respiration that relaxation could not be produced without inhibiting respiration. This, obviously, is undesirable. In

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institutional practice, although ether is still used in a large percentage of cases, the method of its administration has changed from the open drop or semi-open drop method to that of mixing it with a gas and oxygen by means of a gas machine.

Recently, divinyl ether, called "vinethene," has been introduced because with it anesthesia can be induced quickly and the period of recovery is short; consequently it was thought that it would be a better agent than diethyl ether. The only use for which I can as yet suggest that it might be an improvement over diethyl ether is for obstetric analgesia. My opinion is based on Bourne's¹ report of its value in obstetrics and not on personal experience. In the surgical cases in which I have used it, I have felt it was not as satisfactory in my hands as diethyl ether.

Of the gaseous anesthetic agents, nitrous oxide must be mentioned first because of its relative safety from the standpoints of inflammability and explosiveness, because of its lack of odor, and also because of the short periods of induction and of recovery when it is used. For the average patient who has received preliminary medication, and for whom ether in small quantities is not contraindicated, nitrous oxide and oxygen is a most satisfactory combination to which to add ether. The rate at which ether should be added is from $\frac{1}{2}$ to $1\frac{1}{2}$ fluidounces (15 to 45 c.c.) each hour, unless the carbon dioxide absorption technic is used. The present purity of nitrous oxide and the availability of modern devices by means of which it can be administered inexpensively, mean that it must be reconsidered as valuable in both large and small institutions. Although it is the weakest of the gaseous anesthetic agents in common use, preliminary medication in recent years has extended its usefulness, and in my opinion it has regained a great deal of the favor it lost when ethylene became widely used. It is particularly useful when tribromethyl alcohol in amylene hydrate (avertin) is administered preoperatively to produce basal anesthesia. For dental use it is undoubtedly the gaseous anesthetic agent of choice, especially for administration in the dental office.

Ethylene is a splendid contribution which Luckhardt and Carter² made to anesthesia. It has markedly influenced the search for still

better agents and its use has pointed out to a host of persons, in the thirteen years since its introduction, that each patient should receive special consideration in the choice of the anesthetic agent that is to be administered to him. I believe that the importance of the wide use of ethylene is not realized at the present. The preparation will not be accorded its proper place until the history of anesthesia is viewed in retrospect about ten years from now. Ethylene, because it is inflammable and explosive, was limited in its clinical application more and more rapidly as cautery and diathermy became increasingly widely used. Its position has been less secure since cyclopropane has been introduced, although cyclopropane also is inflammable. Cyclopropane is satisfactory for use in cases in which ethylene may not be safe, and, compared with ethylene, it gives better relaxation and more oxygen can be used with it. In my experience, these two agents have been very useful because when expense must be considered and the device for removing carbon dioxide is not at hand, ethylene is preferred to cyclopropane; on the other hand, if one of the most modern gas machines is available, cyclopropane, after experience has been gained in its use, soon is preferred to ethylene, especially in those cases in which a general anesthetic agent is to be given by inhalation and ether is contraindicated. The usefulness of either one of these gases is increased if a local anesthetic agent or ether is used as a supplementary agent. Cyclopropane has one characteristic effect when surgical anesthesia has been produced that gives it an advantage over ethylene; namely, that respiration is shallow. The surgeon wants a quiet patient, and to that end he may want extreme relaxation; however, such relaxation may require deeper anesthesia than is desirable in a given case. As has been pointed out before, shallow respiration often permits an operation to proceed with less relaxation than when breathing is natural or when it is increased in depth. However, ethylene is the more economical agent.

In my judgment, there is a definite place for each of the three gases that I have mentioned. Any one of them may be used with spinal or regional anesthesia, but it has seemed to me that cyclopropane gives the most uniformly satisfactory results when combined with spinal anes-

thetia or with abdominal block. Definite advantage is gained by infiltration of the line of incision or by use of a block method of anesthesia, whether ethylene or cyclopropane are to be used, because there seems to be more oozing when they are employed than when nitrous oxide is used. It has been interesting to me to have heard surgeons complain, when ethylene was introduced, that there was noticeably more oozing with it than with nitrous oxide, and then to have heard the criticism that cyclopropane produced more oozing than ethylene. In a few years everyone concerned will be accustomed to this phenomenon and then it may no longer be considered a disadvantage. Certainly wide choice in the gaseous anesthetic agents is offered and there seems little to be desired in that connection.

However, in addition to the development of valuable agents, there have been contributions which have increased the applicability of the inhalation method. For example, Magill's³ large soft rubber intratracheal tube can be introduced either through the nose or the mouth and thereby furnishes the patent airway which is of inestimable value in administering any general anesthetic agent. The tube is sufficiently large that the patient can inhale and exhale through it, but any usefulness of the insufflation method is not lost if that method should become necessary for administering the anesthetic agent or for ventilating the lungs. During prolonged operations, a greased catheter can be inserted through the intratracheal tube and whatever material may have accumulated in the trachea or the tube can be aspirated. This is of obvious value in those conditions in which mucus or other material may be coming from the lungs. With the tube in place the mask can be fastened to the face in the usual way and satisfactory results can be obtained from general anesthesia when otherwise they would not be obtained. By means of an adapter, the tube can be connected to the gas machine so that the anesthetist and his devices will be eliminated from the field of operation. This has greatly facilitated plastic surgery and other operations on the face, head, and neck. The method is obviously indispensable for operation in many intrathoracic conditions and is of special benefit in operations for diaphragmatic hernia. I know of no single thing in general anesthesia, unless it be ether

itself, the loss of which I would feel more keenly than if I now had to give up this method of Magill's. I feel that physicians as a whole should know something about the use of the large intratracheal tube.

RECTAL ANESTHESIA

Anesthetic agents have been administered by rectum for a number of years. The first significant step in establishment of this method was the use of a mixture of ether and oil by Gwathmey in 1913.⁴ Successful application of this method requires preliminary medication which depresses respiration. Preliminary medication is easily accomplished by the combined use of morphine, atropine and a barbiturate. It is essential that escape of ether in the breath be minimized or controlled so that the ether will accumulate in the blood stream in such concentration that the patient will be anesthetized. The importance of rectal anesthesia was relatively greater up to about 1923 than since, because alternative methods of anesthesia had not been sufficiently developed. The uncontrollability of a single large dose of an anesthetic agent given by rectum retarded development of the method and in time it was utilized mostly for obstetric analgesia. In this field it was useful and beneficial, and it continues to be so. The oil-ether colonic method has been applied to control of patients suffering from severe, uncontrolled asthma.⁵ For children the mixture generally has been 50% ether and 50% oil. For adults, 65% ether and 35% oil are employed and of the mixture, 2 fluidounces (60 c.c.) are given for each 20 pounds (9 kg.) of body weight, when anesthesia is to be attempted, and a gas is given by inhalation in the amount necessary, as a supplementary measure.

For the surgeon who is operating on the head or the upper part of the body, obviously it was convenient to have the anesthetist out of the way. For this reason, chemists attempted to produce a better anesthetic agent for rectal use. The result was introduction of tribromethyl alcohol in amylene hydrate (avertin), which is not eliminated through the lungs but instead is detoxified in the liver. In the first period of its use as an anesthetic agent, untoward results occurred because of a weakness that cannot well be overcome in the rectal method of anesthesia; namely, that the average dose given to some individuals may be a toxic dose for others. In time, how-

ever, the method was altered so that the drug was used in relatively safe doses and for basic anesthesia, which, by itself, is insufficient for operation. Supplementary anesthesia, either local or general, however, is used and the combined effect is satisfactory. This combined method of anesthesia has filled a real need, especially in those institutions in which the anesthetist is not equipped to make available to the surgeon all of the modern methods of anesthesia. Preliminary medication is not always used when avertin is employed, although I prefer to give a small dose of a barbiturate, and thus reduce the dose of avertin. There have been occasional cases in which avertin has seemed to be the preparation of choice, as for example in fulguration of pharyngeal tumors or in major manipulations with the bronchoscope and especially in connection with use of the fluoroscope. These agents for rectal anesthesia, of course are to be avoided in the presence of diseases, or lesions of the rectum or colon.

Rectal use of the barbiturates has been attempted. I find that they are particularly useful in anesthetization of very small children; a capsule of the sodium salt of a barbiturate can be given as a suppository with excellent results when transfusion of blood or intravenous administration of fluids is necessary. Because of the freedom from untoward reaction in cases in which barbiturates have been administered it probably is advisable to give them as premedication, by the rectal route, to adults who are to receive fluids intravenously. The care with which the solution of avertin must be prepared does not add to the convenience of the rectal method, and in all probability, the development of this method to a wide clinical application will depend on the availability of better agents than at present can be had.

INTRAVENOUS ANESTHESIA

Interest in the intravenous method of anesthesia has gained its greatest impetus since introduction of the short-acting barbiturate, sodium *n*-methyl-cyclohexenyl methyl malonyl urea (evipal soluble). It is unfortunate that in its early use the technic recommended was to inject an indefinite quantity of the drug intravenously, remove the needle, and then proceed with the operation. It will be widely recognized, if it is not already, that a safer technic is to administer the

barbiturate intermittently as it is needed, following the general principle applied when ether is administered by the open drop method. Recently a new thiobarbiturate has been developed which seems to me to be a useful agent and one that gives promise of making more widely acceptable the intravenous method of anesthesia.⁶ This drug has been called "pentothal sodium."

A person who is experienced in the intravenous use of these agents becomes rather enthusiastic about them when they are applied properly. They should not be used for long operations which require great muscular relaxation nor should they be used for manipulations in the throat, as for example bronchoscopy, which cannot be satisfactorily performed unless the throat is cocainized. The combination of intravenous anesthesia and cocainization of the throat is a happy one, especially when the procedure has to be repeated. The intravenous method should be avoided in most cases if a disease or condition is present which obstructs respiration or may produce symptoms, one of which is dyspnea. It is advantageous to use a preliminary dose of morphine, a barbiturate, and atropine when the procedure is going to take some time, for instance, thirty minutes. However, for short procedures, such as manipulation of a joint, reduction of a Colles' fracture, removal of one or two teeth, opening of an abscess, or spinal puncture, no preliminary medication need be given. It has been used for a variety of operations (Table 1).

The principal sign of anesthesia when these new barbiturates are given intravenously is essentially related to the depth of respiration. If anesthesia is profound, respiration is shallow, and vice versa. In order to make conditions as safe as possible for the patient, I have hit on the scheme of using a cotton "butterfly" fastened to the upper lip in such a way that inspiration and expiration of air are indicated by motion of the cotton.⁷ If respiration is not arrested at any time, the patient is considered to be in relatively safe condition. In order to add further to the relative safety of the method, I have incorporated in the anesthetic solution a certain amount of respiratory stimulant. Although this modification of technic is relatively recent, and for that reason only one of the many respiratory stimulants has yet been tried, the results are, to me, encouraging. The present combination is 1

gm. of pentothal sodium dissolved in 20 c.c. of sterile distilled water to which is added 1 c.c. of a 25% solution of coramine so that the proportions are one part of coramine to four parts of pentothal sodium. The patient's respirations are more visible in the average case when the respiratory stimulant has been used than when it has not been used. The use of a respiratory stimulant is particularly valuable when preliminary medication has been used. Further refinement of this technic will bear probably on selection of the best anesthetic agent and the best respiratory stimulant that can be obtained; the judgment of the anesthetist will be important as to whether he will use or omit the stimulant for a given patient, and if it is to be used, in what proportion. Such judgment can come only from experience in the use of this technic.

The use of a 5% solution of pentothal sodium instead of a 10% solution has practically eliminated the occasional complaint of sore arm on the part of the patient. This complaint is attributable either to extravascular injection or to hemolysis and thrombosis of a vein; in some cases it is reported that a nerve near the vein has been injured by the needle. When an extravascular injection of the solution has occurred however, and there is an untoward reaction, application of moist heat has been beneficial.

Patients to whom these intravenous anesthetics have been given often have tolerated them better than other anesthetics because there seems to be less nausea and vomiting than even with a gas. The skin remains dry and warm and it has seemed to me that there was less shock in many instances than I might have expected. I refer particularly to cases in which shock has followed previous anesthetization and a surgical procedure and the surgical procedure must be repeated at a short interval. I do not maintain that there is no shock, but that it appears more slowly and for that reason can be more easily combated. I do not recommend that this method be used by inexperienced individuals. I feel that at least they should witness the administration of an intravenous agent a few times before they attempt it. Whenever it is used there should be a justifiable reason for using it.

REGIONAL ANESTHESIA

Local and regional anesthesia have found such useful application that I feel it unnecessary to

urge their use, except to say that I think they are not used enough in combination with anesthesia by inhalation and with proper preliminary medication. This impels me to urge again the use of a mixed form of anesthesia which I have called "balanced anesthesia." In this procedure safe doses of preliminary medicaments are used, moderate amounts of a local anesthetic agent are then injected, either locally, regionally, or intraspinally, or if the scope of the operation and the duration of it make control by the local agent or method impossible gas anesthesia is used in a supplementary fashion. For example, the combination of cyclopropane with spinal anesthesia has been very satisfactory. At present a great deal of interest centers on spinal anesthesia. It is a splendid method of producing relaxation and when that is essential to the success of the operation, use of spinal anesthesia must be seriously considered.

The most important single point to be remembered in the use of spinal anesthesia is that serious untoward effects can be warded off only if the method is avoided in cases in which marked debilitation is present, regardless of whether the debility is evidenced by one or by several signs and symptoms. For example, spinal anesthesia is practically contraindicated for those patients the concentration of whose hemoglobin is less than 50% of normal, for those who have recently lost an extreme amount of weight, for those who have undergone a prolonged period of intestinal obstruction with dehydration, for those whose blood pressure is less than 100 mm. of mercury, or for those on whom operation may be complicated by marked, and perhaps uncontrollable hemorrhage. It may be avoided in highly neurotic individuals or those with central nervous system pathology. The indications for spinal anesthesia depend somewhat on the agents and methods of anesthesia that are available to the surgeon at the time of the operation under consideration, because successful use of this method depends on skill in administration, good judgment as to its suitability, the extent and duration of the operation, whether or not means are at hand for combating immediate untoward results, and the availability of an anesthetist to administer an anesthetic by inhalation, together with oxygen, as a supplementary procedure, and

especially if circumstances are favorable for its application.

Ordinarily it is best to use procaine for spinal anesthesia and to make the subdural injection through one of the lumbar interspaces. Preliminary administration of a barbiturate, morphine and atropine is desirable. The concentration of the solution as it leaves the syringe should seldom exceed 5%; ordinarily it is about 3%. The lumbar puncture now can be performed with the patient lying on his side unless difficulty is anticipated, and then it should be done with the patient in a sitting position. Barbotage is not used. I keep the needle in place for about ten or fifteen seconds after the injection has been made, with the patient's head no longer flexed. Use of ephedrine to support the blood pressure is usually advantageous. The dose of ephedrine should also be estimated for the individual patient as is the dose of procaine. For example, it is usual to administer, for the ordinary operation on the average adult, 1 mg. of procaine for each pound (0.5 kg.) of body weight, this to be reduced in proportion to the patient's debility. I usually administer 25 mg. of ephedrine just before administration of the anesthetic agent, with the idea of permitting the systolic blood pressure to fall from, say, 120 to 80 mm. of mercury. If the fall is greater, say, to 60 mm. of mercury, an additional amount of ephedrine, usually 25 mg., is injected intravenously. When a patient has hypotension before operation, 50 mg. of ephedrine is given before the spinal anesthetic agent is administered. It is my intention always to give a safe dose of the spinal anesthetic agent, regardless of whether or not adequate anesthesia results, as I would much prefer to supplement spinal with general anesthesia, because the spinal anesthesia is inadequate, rather than to have satisfactory spinal anesthesia and find it necessary to treat the patient for too marked prostration. Nausea and vomiting, which not infrequently occur in the course of spinal anesthesia, especially in intra-abdominal operations, usually can be controlled by administration of oxygen, or of oxygen and carbon dioxide, or of an anesthetic gas.

Lumbar puncture headache occurs in a certain number of cases. The treatments for it are many. Usually, if the patient's head is kept down, as when he lies flat in bed, or if he is

kept in slight Trendelenburg position, he is afforded relief. The administration of analgesics, such as acetylsalicylic acid, amidopyrine, or other hypnotic agents such as amytal and pentobarbital sodium, give some relief. The use of a retention enema of 50% solution of magnesium sulphate has helped some patients, and the use of pituitrin has helped others. Additional spinal punctures and intravenous injections of concentrated solution of glucose have given results. Even suggestion has been used in cases in which the headache seemed already to be subsiding; in any event, the patient appreciates encouragement. If patients complain for months or longer, there is usually some factor, not yet well recognized, that is contributing to persistence of the symptoms; they recur whenever the patient becomes tired or worried or during periods when sleep and rest are inadequate.

Spinal anesthesia seems to depend for part of its favor on the ease with which most physicians perform lumbar puncture. However, when someone is available who is trained, other methods of regional anesthesia may often be used with satisfaction and with few undesirable effects. For example, abdominal block or infiltration of the line of incision will provide anesthesia for incisions, and supplementary administration of an anesthetic agent by inhalation will provide anesthesia for intra-abdominal manipulations. The combination will be effective during the period of closure of the wound. It is much easier to utilize this balanced method of preliminary medication and regional anesthesia when one has relieved the patient of fear, but it is especially useful for those patients who do not wish to undergo general anesthesia by inhalation. Sacral block, when it is available, is a satisfactory method of anesthetizing for operations on the anus, rectum, and perineum. It produces anesthesia with relaxation and, when preliminary medication has been used and the amounts of 1% solution of procaine employed are less than 100 c.c., respiration is usually quiet and nausea and vomiting seldom occur. Sacral block anesthesia, in the hands of interested and experienced users, is satisfactory, and I think more attention should be given to it by the anesthetist, the surgeon, the obstetrician, and especially by the proctologist, for its value in operations on the anus, I believe, is definite. I think it is of sufficient importance

that physicians should be trained to administer this type of anesthesia for those who do not have the time to make a study of it. Cervical block, paravertebral block, field block, and various other uses of local anesthetic agents deserve the attention of all who might find a use for them. At the same time, one should be cautious in the use of those agents which have not been proved by long use to be relatively safe. Occasionally injections of local anesthetics are of aid in the location of pain paths and may help to arrive at differential diagnosis. Injections for the relief of pain in inoperable conditions have been advocated and in selected cases they are worth trying, provided the patient understands beforehand that he may not obtain relief and that the condition may be worse.

SELECTION OF THE METHOD

Careful selection of an anesthetic and method of administration that seems indicated in a particular case are important. I think one should have a definite reason for using a given agent or method in a given instance. Efforts should be made toward making available the various anesthetic agents and the methods of their administration that have been found to be useful and relatively safe so that patients generally may have this additional benefit besides those already available through modern surgery.

Table 1

ONE THOUSAND SIX HUNDRED FORTY-FOUR CASES IN WHICH PENTOTHAL SODIUM* WAS USED INTRAVENOUSLY
(June 18, 1934 to March 1, 1936)†

	Cases
Operation on brain and other parts of central nervous system	53
Operation on eye.....	83
Dental extraction	40
Cystoscopic examination	277
Transurethral prostatic resection	58
Fulguration (bladder, urethra, and so forth).....	72
Manipulation ureteral stone.....	29
Miscellaneous urologic procedures.....	105
Operation within thorax	27
Operation on breast	104
Operation on thoracic wall	23
Operation on head and neck; oral and plastic surgery....	263
Dilatation and curettage	144
Miscellaneous extra-abdominal operations.....	189
Miscellaneous intra-abdominal operations	42
Spinal puncture	25
Removal of packs, drains, and so forth.....	62
Dressing, insertion of radium, examination, and so forth....	48
Total	1644

*Sodium ethyl 1-methyl butyl thiobarbituric acid.

†In about 10% of cases pentothal sodium was used for induction of anesthesia and was followed by inhalation anesthesia.

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OUR LAY ANESTHETIST PROBLEM

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The Bulletin of the American College of Surgeons in October, 1935, makes the following statement in its Hospital Standardization Report:

"The science of anesthesia is rapidly developing. New types of anesthesia, new methods of administration, and complicated apparatus demand serious medical thought. It is unfortunate that a large number of hospitals fail to recognize the necessity and value of a well organized department of anesthesia. This presupposes competent medical supervision, preferably a medical anesthetist, but when such a specialist is not available, a member of the medical staff qualified in administration of anesthesia may be appointed. Such a requirement does not preclude the use of the nurse anesthetist who is properly trained and qualified to give anesthesia. It is unfair to expect the nurse to be responsible for the service, but rather she should work under proper medical supervision. As the administration of anesthesia is generally conceded to be the practice of medicine, and inasmuch as it involves risk to human life, it is only reasonable to expect medical supervision. This cannot be done properly by the surgeon for he is frequently not specially trained in this work, nor should he have to carry the responsibility when under the strain of operating."

This report clearly states that a nurse administering an anesthetic is practicing medicine. This she has no legal right to do. What are the licensed physicians going to do to overcome this admitted violation of the Medical Practice Act? Are they going to allow themselves to be divested of their property rights by allowing technicians to practice medicine? Our County Medical Society in Article I of its constitution states:

"The objects and purposes of the Society shall be to

Address before Erie County, N. Y., Medical Society.

extend medical knowledge and advance medical science; to elevate the standard of medical education; to secure the enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members, and to protect them against imposition; to assist in the preservation of the public health; and to enlighten and direct public opinion in regard to the problems of medicine."

Thus we have a constitutional right in our Society to request action and protection in this infringement on our property rights. Many graduates in medicine are willing and anxious to qualify themselves in the specialty of anesthesia, but have become discouraged when confronted with the fact that many hospitals and surgeons will not give up the administration of anesthesia by nurses. Naturally, we ask for the reasons for this attitude. I will briefly go over some of them.

I. *The Surgeon's reasons:* (a) The cost of anesthesia is less. He can hire a nurse anesthetist for \$100.00 a month, or less, and besides administering anesthetics, she also will do office and laboratory work. I have had one such nurse tell me that she averaged less than \$5 a case, the surgeon charging \$10 and up for her services.

This is probably good business, but to my mind is far worse than fee-splitting which the Bulletin of the American College of Surgeons condemns five times on one page.

(b) The nurse anesthetist is always on hand. The surgeon does not have to wait for her.

(c) She has a certain mechanical skill which is better than using an interne or untrained medical anesthetist.

(d) She has no ambition to get beyond anesthesia and has no interest in the operation, nor in using anesthesia as a stepping stone to surgery.

The Hospital's reasons: (a) Many hospitals feel that they have a right to a profit from anesthesia. One hospital I know of has gone so far as to raise the surgery charge to include the anesthetic fee. Thus when a physician anesthetist is called in, the patient has to pay both the hospital fee for anesthesia and the fee of the medical anesthetist. Other hospitals demand and receive a commission on all anesthetic fees collected by medical anesthetists.

(b) Better control is had over anesthetists. Nurse anesthetists can be hired and assigned

certain hours on duty as with other hospital personnel.

(c) Certain hospital associations have started a propaganda for nurse anesthesia and have even gone so far as to subsidize an association of so-called hospital anesthetists. Hospital authorities feel they must support these hospital associations in every way.

I do not think that any of the above reasons are valid to continue the practice of nurse anesthesia. Certain hospital staffs, headed by conscientious surgeons, have felt that the patient should have the best possible service and demand that anesthesia be placed in the hands of trained medical anesthetists. Dr. S. S. Goldwater, New York City's Hospital Commissioner, in his annual report for 1935 states in regard to anesthesia:

"Analysis of the anesthesia service at Bellevue Hospital showed that the old staff, consisting of a medical anesthetist, assisted by nurses was incapable of developing and supporting an adequate program, incapable of utilizing the latest advances in anesthetic technique or of contributing to the teaching of the science and art of anesthesia. A new service was arranged with an exclusively medical personnel. It is now possible for the anesthetists routinely, to make pre-operation evaluation of the patient's tolerance to a proposed operative procedure and to take part in resuscitation procedures."

Let us now look into the advantages of a trained medical anesthetist.

1. He usually owns his equipment. The value of an up to date anesthesia equipment including oxygen and carbondioxide therapy apparatus, and portable apparatus to be used in homes, is at least \$2,000.00. With proper support from the medical profession he can keep his machines up to date and add new material as it is brought out.

This is important, as machines that were up to date five years ago are now practically obsolete and have had to be replaced. This is not being done by the nurse anesthetists. They are trained in one method, usually not up to the minute, and forever afterward adhere to that method. In some hospitals I have seen nurse anesthetists using methods that were used twenty years ago and are now considered unsafe by leading anesthetists.

2. Through frequent Congresses of anesthetists, other medical meetings and journals of anesthesia, the medical anesthetist can keep up

to date. He is always welcome at the large teaching centers of anesthesia.

3. Due to his medical training he is able to act as consultant as to which anesthetic agent to use and to evaluate the risk of the operative procedure in each patient. This decreases post-operative morbidity and mortality to a marked degree. Dr. Frank Bortone of Jersey City, N. J., found in a survey of New Jersey hospitals that technician anesthesia was at least one-third more fatal than professional anesthesia. Medical anesthesiologists have been able in some instances to reduce what had seemed like an irreducible surgical mortality in their institutions. I will quote briefly a few instances:

Dr. André Crotti of Columbus, Ohio reported a death rate of 0.9% in a series of 7000 goiter cases.

Dr. Frank Leahy of Boston, 12,000 goiter cases with a death rate of 0.85%.

Dr. Chas. E. Chambers of Doncaster, England, in a four year period was able to reduce his mortality from 4 to 1% by substituting expert anesthesia instead of inexpert anesthesia.

4. The medical anesthetist can take on the duty of teaching internes and medical students in the hospitals and medical schools. This is sadly neglected. It seems paradoxical that in Buffalo some of the surgeons connected with the University of Buffalo are using nurse anesthetists. Leaving aside the consideration of the patient for a moment, is it not the duty of such professors at the University of Buffalo School of Medicine to further the science of anesthesia by supporting medical anesthetists so that students of medicine and internes can be properly taught anesthesia? The practical teaching of this art is woefully neglected at the university and in the hospitals connected therewith. Are the Professors of the University of Buffalo willing to admit that they have no desire or capability of teaching students and graduates in medicine to administer an anesthetic properly? If so they are dishonoring their obligation as teachers and admitting defeat by not being able to provide knowledge to, and utilization of members of their own profession in so noble and essential a branch of medical practice as anesthesia.

5. Newer anesthetic agents can be properly evaluated. In the past few years the medical anesthetists have brought out and perfected the

use of several new agents; notably the barbiturates, by the medical anesthetic staffs of Indianapolis hospitals; the use of cyclopropane by Dr. Ralph Waters and associates of Madison, Wisconsin; the carbon-dioxide absorption technique by the same men. There has been no one advance of any importance made by the technician anesthetists.

6. During the operation the medical anesthetist charts the blood pressure, pulse and respiration. He can detect symptoms of impending shock by these methods sometimes twenty minutes before it really occurs and can advise the surgeon of danger. Also he can advise the curtailing of the operation or of the completion of it in two stages. Postoperatively he can watch the patient, keep the air passages free from mucus, vomitus, etc., and prevent or treat atelectasis. The technician anesthetist is not qualified, trained or legally allowed to attempt these functions.

7. Savings in the amount of anesthetic gases and other materials have been great. At the Millard Fillmore Hospital in Buffalo, N. Y., the charge for gas has been reduced from six dollars per hour to two dollars a case when the newer apparatus is used. Thus in an operation lasting one and one-half hours, there is a saving on gas alone of several dollars or practically half of the usual anesthetists fee. Also the stay in the hospital can be reduced. All concerned are more liable to be paid if the hospital bill is lessened by decreased gas costs and days in the hospital. Drs. Russell, Connell and Anderson of Des Moines, Iowa, reported to their County Society a saving of one and one-half days for their patients from the time they left the operating table until they took their first nourishment, adding that this saving of hospital days was anywhere from four to ten days.

Thus we see that the nurse anesthetist is a legal, moral and economic liability to the hospital and medical school. She does not provide the same degree of safety to the patient that professional anesthetists do; she is incapable of conducting a complete modern anesthesia service for the convenience of the medical profession; she can not aid in the teaching of internes not having the fundamental education for such a function; she is not an economic asset for the patient although she may seemingly be for the hospital or surgeon.

The question now naturally arises: "How much loss is there to the Medical Profession?" Figuring conservatively, there is a yearly loss to the profession of between \$75,000 and \$100,000, in the City of Buffalo alone. McMechan rightly says:

"The economic factor responsible for 25,000 too many doctors is the fact that 25,000 technicians are practicing socialized and corporation medicine. This is forcing more and more doctors to go into the surgical specialties to make a living. Further overcrowding and technical invasion will inevitably destroy surgery economically. So far the legal profession has protected its property right by avoiding the pitfall of supervised practice of law. But it has had to secure Supreme Court decisions to protect itself from lawyers delegating this property right to banks and other institutions for the corporation practice of law. If the property right to practice medicine is not upheld as interpreted by West Virginia, and Indiana, and safeguarded by the profession, the socialization and corporation practice of Radiology, Pathology and Anesthesia will be the future fate staring all other specialists, including surgeons, in the face."

It may be of interest to the profession to know that just recently a few surgeons and the hospital authorities in Atlanta, Georgia, tried to revise the constitution of the Atlanta Academy of Medicine to provide that Radiology, Pathology and Anesthesia were not the practice of medicine and even the Dean of Emory University Medical School sided with these destructionists. If it were not for the activity of Dr. Collier and others interested in the welfare of the profession, this proposed robbing the licensed medical graduate of his property rights might have been accomplished.

I have been informed by legislators that the medical profession can obtain any legislation they want if they are only united in their efforts, but that it is very difficult to have the profession act as a unit for their own benefit. Therefore, legislation to help the profession is not put through, and even harmful legislation is passed.

There also has been a lack of interest in the State Medical Society and the American Medical Association in providing a section on anesthesia. Such a provision would place medical anesthesia in a more dignified position and help in its advancement and acceptance by surgeons and hospitals. To enlighten the profession as to what has been accomplished in Indiana, I will quote from a paper entitled "Indiana State Medical Association Section on Anesthesia, Its Back-

ground and History," by Floyd I. Romberger, M. D., Lafayette, Ind.

"An March 30, 1934, our State Board of Medical Registration and Examination went into Executive Session and, after due consideration and mature deliberation, issued the epochal edict that the administration of an anesthetic was indeed and fact medical practice. They notified all the hospitals of the State of Indiana of this decision, citing two counts, one against the hospital, the other against the nurse.

1. Concerning the hospital: "The hospital is violating the Medical Practice Act, as a corporation can not have the privilege of practicing medicine under the law." It was becoming increasingly obvious to the Board that, in the event that it is permissible for hospitals to use nurses to practice medicine in the form of anesthesia, then, indeed, it would be no departure from principle for hospitals to employ surgeons, obstetricians, or what not. And to collect and chisel in on the fees! Syndicated practice! Further, a corporation cannot be licensed to practice medicine because a license is an individual right; nor can a licensee lend his license to a corporation or to a lay person, such as a nurse.

2. The Board's interpretation relative to the nurse anesthetist was: "The nurse is practicing medicine without a license, as she is assuming duties which are, under the law, those of a licensed physician." This was and is the Board's interpretation of the Indiana Medical Practice Act. These Medical Practice Acts are not for the vain and glorified purpose of creating a medical monopoly within each state, nor are they primarily designed to regulate the intimate details of medical practice. No! The acts were passed as necessary measures for the protection of the public weal, so that unqualified and unscrupulous practitioners may not foist themselves upon the unsuspecting citizenry of their respective states. The Indiana Board was not peculiarly and particularly and alone interested in the sole objective of anesthesia as being medical practice, rather they took a far broader attitude; they felt keenly that to them had been delegated the authority and upon them rested the responsibility of strictly enforcing the Indiana Medical Practice Act in every phase, whatsoever the method of practice, so that all and everyone who would attempt to heal, cure or relieve medical sickness or surgical illness, by any means whatsoever, first should qualify for such practice under the law as laid down by the sovereign state of Indiana. In other words, the public weal was and is and ever remains the fundamental consideration. On August 2, 1934, in a letter to the Board, Attorney General Lutz rendered the following opinion:

"It is the general knowledge that an anesthetist in rendering a person insensible to pain must, in the administering of this agent, continuously diagnose and keep a careful watch and supervision over the amount of the agent that is to be administered. It is impossible for the surgeon to perform his operation and also to assist in any way in the administration of an anesthetic.

"The law is—to prescribe for or to give surgical as-

sistance to, to heal, cure or relieve—shall be engaged in the practice of medicine within the meaning of this act.

"It follows from the above that, in our opinion, the administering of an anesthetic is a duty to be performed by a licensed physician only. Philip Lutz, Jr., Attorney General.

"In some states and many communities, lay anesthesia is permitted or condoned behind the thinly camouflaged words, 'under the supervision of and in the presence of a licensed physician.' This is of itself, neither more nor less than implied guilt on the part of such physician that he is criminally lending his license in the perpetration of a fraud. Against his own state law! Against his own State Board! Against his own profession! Because by no concept of the imagination can it be otherwise than that an act which requires professional supervision is of itself, a professional act. Accordingly, doctors never should have tolerated this flagrant infringement upon our property rights for these many years without vigorous protest. State Association sections on Anesthesia will go a long way toward re-establishing our just and lawful position before every court in the land. Upon your individual efforts in organized medicine, as well as upon your active, cooperative participation in the integral whole, depends the practice of medicine in the future years."

It may be here noted that Indiana has a well organized section on anesthesia in its State Society.

Let us now consider how to overcome this evil. Are there any means to stop it? Can sufficient pressure be brought to bear on surgeons and hospitals so that not only will our generation be protected, but that medical students of the future be assured that they will not be deprived of their right to make a living? Anesthesia is still in the pioneer stage of its development, but will undoubtedly become a specialty of the highest importance. All the fundamentals of anesthesia can be taught in our medical schools. Animals are continually being put to sleep for operations in our basic science laboratories, by which students of medicine can be taught. This is done at such universities as Wisconsin, Stanford, Cincinnati, Chicago, Illinois, and many others. If the same amount of money were paid out to specialists in anesthesia as is paid out to technicians, a great improvement could be made in this art. The code of medical ethics of the British Empire removes any physician from the medical register who uses any one but a doctor to give an anesthetic or who gives an anesthetic for any one but a registered doctor. As a result

every hospital has its full quota of exceedingly competent medical anesthetists.

It seems to me that the following suggestions will be helpful in effecting the much needed changes.

1. A general practitioner referring a case to a surgeon should request, or if necessary, demand that a qualified medical anesthetist be employed if an anesthetic is to be given. Failure to comply with such a request would prove that such surgeon has not the interest of the profession at heart, but is working for his own selfish interests. This evil would be curbed if surgeons realized they might lose some of their referred cases.

2. When referring a case to a hospital this precaution should also be taken. Hospitals would soon see the error of their ways and not coerce members of their staffs to use nurse or technician anesthesia against their better judgment. I know of several surgeons who would like to use competent medical anesthesia, but do not do so on account of the policy of the hospital. They do not care to endanger their hospital staff connections.

3. A resolution could be adopted by the County Society condemning the practice of technician anesthesia, a copy of such resolution being sent to each hospital in the County and to each member of our Society.

4. The delegates to our State Society could be instructed to vote in a body to secure legislation such as has been done in Indiana and West Virginia. However, this can not be enacted at once as there are not at present enough medical anesthetists to cover the work. Sufficient time, which would require two or three years, should be given hospitals and surgeons to make the change. If cooperation is had from both surgeons and hospitals, the patient, and the medical profession as a whole will be greatly benefited thereby. This does not mean that surgeons and hospitals should use this argument as a subterfuge for not fostering the proper training of anesthetists and the placing of anesthesia under proper medical supervision as has been recommended by the American College of Surgeons and progressive Universities of Medicine.

5. The Committee appointed by the Erie County Medical Society composed in part of anesthetists should interview each surgeon and

hospital using nurse anesthetist. A complete report should be made to the Society of the willingness of hospitals and surgeons to comply with the recommendations of the American College of Surgeons and of our County Society, so that improvements can be instituted for the benefit of patients, hospitals, the general profession as a whole and the training of students of medicine.

6. There should be a section on anesthesia in the State Society and in the American Medical Association. The establishment of such a section should have our full support.

Anesthesia is still in its early development. When one considers that it has been only ninety years since its discovery, and that some of us have practiced in this specialty over thirty years, we only then realize that much is yet to be perfected and discovered in the science and art of anesthesia and that the opportunity for good work in this field is great. Let us not allow this specialty to be taken from our hands and be placed in the hands of mere technicians by selfish hospitals and surgeons, and also by lackadaisical members of the profession. Only concerted action by all having the welfare of the profession at heart can prevent this important branch of the practice of medicine from falling into the hands of improperly trained individuals and becoming socialized or corporation practice. The security of the average physician is no greater than the strength of the organized County or State Medical Society. The interest of the doctor cannot begin and end only with his personal affairs; he is a part of organized medicine and can only exist as such due to labors on the part of organized medicine in the past. Let us not by our present negligence and lack of interest destroy the very existence and advancement of a very important branch of Medical Science.

468 Delaware Ave.

ONLY WAITING

Small Boy: "Grandmother, when are you going to start playing football?"
Grandmother: "Why, sonny, I can't play football. Why?"
Small Boy: "Well, papa says he is going to buy a new car as soon as you kick off."—*Carolina Buccaneer.*

THE PRESENT CONCEPT OF ENTAMEBA HISTOLYTICA INFESTATION

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Reviewing my personal experience with the diagnosis and treatment of *Entameba histolytica* infestation beginning with November 23, 1931, and bringing it down to date, June 15, 1936, I find that I have examined fifty-three cases in which this organism was diagnosed by the laboratory. Not one of these cases presented the typical clinical symptoms of amebic dysentery; very few of them presented the characteristics of massive infestation; and the larger percentage had but a small number of the parasites in the single or first stool examination.

The clinical manifestations are grouped as follows:

1. Chronic ulcerative colitis of twenty years standing; amebiasis diagnosed fifteen years ago; blood in the stool.
2. Chronic ulcer at the splenic flexure with contracture; blood in the stool.
3. Perforation of the head of the cecum; intestinal hemorrhage.
4. Spastic colitis—mucous colitis; amebae found in the bronchial secretions.
5. Gastric and intestinal hemorrhage; amebae abundant.
6. Spastic colitis and chronic constipation.
7. Spastic colitis before hysterectomy; adhesions following; colon dilatation.
8. Spastic colitis and involvement of the organ of equilibrium.
9. Spastic colitis from childhood when infection is assumed to have occurred.
10. Mucous colitis associated with spastic contractures.
11. Spastic and mucous colitis.
12. Spastic constipation; some mucus.
13. Spastic constipation associated with intercurrent attacks of mucous colitis.

The following summary of the periods under treatment and the results attained will be of interest.

Total number of cases examined.....	53
Longest period under observation.....	
.....March, 1932, to April, 1936	
Number of cases diagnosed only	3
Number of cases treated one month	4
Number of cases treated two months	4
Number of cases treated three months	6

Number of cases treated four months	5
Number of cases treated six months	31
Number of cases in which supplemental or final examinations were never made.....	28
Number of cases "cured"	15
Number of cases in which there were no clinical symptoms	27
Number of cases in which symptoms were relieved	23
Number of cases in which symptoms disappeared .	15
Number of cases with ulcerations, adhesions or other structural alterations in intestine.....	13

The treatments employed included Chiniofon, Carbarsone, calomel, bismuth subnitrate, Coloni-din, malic acid, C. P. (active—Pfanstiehl), Diodoquin, castor oil, naphthalene, and other remedies reputed to have more or less virtue in removing or destroying amebae.

In all cases submitting to treatment, sufficient clinical improvement was secured to satisfy the patient that he was materially better or "well."

I hesitate to introduce any additional factors of uncertainty regarding a condition which is still so little understood by the great mass of practitioners, but we must consider the "silent" infestation with the *Entameba histolytica*.

The text-book description deals chiefly with the active morbidity, pathology and mortality produced by, or associated with, the virulent or heavy infestation with this organism. The clinical definition and general description reads somewhat as follows:

"Amebic dysentery is a specific infection of the large intestine caused by the *Entameba histolytica*, characterized by a variable mode of onset and course of great irregularity, marked by diarrhea and intestinal symptoms which are usually intermittent with frequent involvement of the liver.

"The diagnosis depends upon a history of residence in an endemic locality. The disease is prevalent in tropical and sub-tropical regions, although sporadic epidemics in temperate climates are not infrequent, particularly in warm weather.

"Exposure to a known focus of infection by ingestion of food (particularly uncooked), and water is important.

"Contributory factors include unsanitary methods of sewage disposal and food preparation, and the prevalence of flies which may carry dejecta.

"Symptoms are preceded by an incubation period which is uncertain, but probably numbers fifteen to ninety days.

"The onset may be sudden or very insidious.

"The symptoms may be divided into:

1. Mild or latent forms;
2. Forms with acute onset;
3. Advanced or chronic forms."

Considerable space is generally given to the discussion of liver and lung abscesses and their

diagnosis; brain abscess; peritonitis; the differential diagnosis from bacillary dysentery and the different forms of pathoses in the large intestine. The use of emetine hydrochloride, Anayodin, colonic irrigation and surgical intervention in treatment. The whole picture is a lurid one and quite characteristic of tropical or semi-tropical infestations.

With this symptom complex in mind, it is difficult to address our attention, with sufficient detail, to the mild or latent forms which, in my opinion, are so common that any form of persistent or recurrent intestinal discomfort should be thoroughly studied by a competent protozoologist, who will subject the patient to an examination of all stools (up to six or seven if there be so many) immediately following a brisk purgation, and the use of warm-stool, warm-stage technic.

In the mild or latent forms the following is a generally accepted description:

"The onset is very insidious, characterized by some lassitude, abdominal discomfort and dyspepsia. Moderate diarrhea or constipation may appear.

"The course is chronic and may be prolonged over weeks and months. There are occasional outbreaks of diarrhea and occasionally a stool containing mucus and occasionally red blood.

"With further progression the symptoms increase in severity and may be classed as cases with acute onset, advanced, or chronic ones."

The fact that with regression, the symptoms suggestive of amebiasis are entirely replaced by symptoms of other types of intestinal disturbance, is neglected.

In June, 1933, I felt justified in making the following statements:

1. That these parasites have gained residence in our alimentary tracts until at the present time a large number of people are infested with them.

2. That such infestation can be demonstrated only by a most careful technic, because of the ease with which this organism is killed outside the body, once it is dejected.

At this point I wish to quote from an article by Dr. W. M. James appearing in the *J. A. M. A.* of October 29, 1927, which reads in part, as follows:

"Recent surveys indicate a prevalence between 5 and 10% in those examined in the United States and England. * * * A peculiarity of gastrointestinal trouble due to *histolytica* infection is that it is chronic, and yields only temporarily and infrequently to dietetic and simple remedial measures. This infection frequently

impairs materially the usefulness and efficiency of the patient, although his general health may be but little affected. * * *

"Survey figures show that one examination uncovers about one-third of the actual number of *histolytica* infections present in a given community; three examinations, between one-half and two-thirds, and six examinations up to about 90%; an indefinite number of examinations may be required before the remaining 10% of infection is found."

I wish to quote also a paragraph from Prof. Clifford Dobell, of the Medical Research Committee of England, instituted in 1915:

"The errors committed by an examiner with little or no previous experience are such that I could not have believed possible, if I had not actually encountered them; and in cases where the health of a patient is at stake, it is, I believe, almost better that no examination at all should be made than that it should be made by an incompetent or inexperienced person."

From these quotations it will be seen that research knowledge relative to this infestation is not so new as many seem to believe. Observations made for the last twenty years are confirmatory of the statements above quoted. Three major propositions are normal conclusions, if we accept these statements as approximately correct. These major propositions may be stated as follows:

1. It is a serious error to rely upon incomplete or hasty laboratory examinations and thereby permit suspected cases to go without the benefit of a conclusive diagnosis when the amebæ may be present. (In this connection I have in mind three patients who were sent repeatedly for stool examinations over a period of four or five years. Each time negative reports were returned, although special request was made for careful, thorough search for all kinds of intestinal parasites.)

2. It is an equally serious error to subject a patient to prolonged and strenuous treatment based upon an erroneous diagnosis.

3. Such infestation can be demonstrated only by a most careful technic, because of the ease with which this organism is rendered non-motile outside the body.

Many other ameboid forms of life may be found in the intestinal canal. The forms most often to be differentiated from the *histolytica* are:

- (a) *Entameba nana*
- (b) *Iodameba butschlii*
- (c) *Entameba coli*.

In addition to these the *Dientameba fragilis* and the flagellate group (of which there are four prominent members), may complicate the picture.

The bodily structure, size and cytoplasmic contents of each type must be known to the protozoologist. The appearance of each of the various stages through which each type passes must likewise be thoroughly mastered.

Furthermore, a thorough mastery of the various staining methods, which may be used for diagnostic purposes, is indispensable when the motile form is not available.

Dr. W. M. James of Herrick Clinic, Panama, writes me that, after twenty-six years of experience, he does not believe that a reliable diagnosis of the cystic stage of *Entameba histolytica* can be made without the use of special staining methods in the absence of an acute or sub-acute dysentery. He relies upon wet fixed and iron-hematoxylin preparations in addition to routine eosin and iodine stains.

Dr. James says: "In the fresh warm specimen and under the exact conditions which should be maintained to view the motile *Entameba histolytica*, the characteristics of this parasite are almost finally diagnostic without other measures."

Because of the exacting technic of the stool examination to which my patients were subjected, we continued to find (in patients who are clinically well and free from all symptoms) the parasites in the stools after a brisk purgative was administered. This observation led to the exhibition of many different preparations in the "follow-up" treatment. Approximately a year ago a new preparation was brought to my attention (with very modest claims), to ascertain its clinical value in the treatment of these patients. This substance is described as Diiodo-hydroxyquinoline, with the chemical formula, $C_9H_4NI_2OH$. The commercial product is sand colored, its melting point is given at 199-201° C., it is 93% pure and contains not less than 63.9% iodine. At least this is the statement made by the chemists responsible for the preparation of this product. It is sold under the trade name of *Diodoquin.

Related drugs in this field of therapy, according to reliable information are $C_9H_4NIOHSO_3Na$ (Chiniofon) having not less than 26.5% iodine.

and $C_9H_4NICLOH$ (Vioform) with an iodine content of 37.5 to 41.5%.

Diodoquin is extremely insoluble in water, dilute acids or alkalies, and only slightly soluble in common organic solvents. I am told that dogs receiving oral doses ranging from 4 to 6 grams per day for a duration of six days failed to develop any toxic symptoms. Most of the drug was recovered in the excretion of these animals.

A report of a study of the metabolism of this drug in rabbits is as follows:

"It is observed that the iodine was not split off from the quinoline nucleus and that the drug was in part excreted in the form of conjugation products." These observations lead me to the conclusion that the therapeutic efficiency of Diodoquin may be comparable to the action of certain catalytic substances.

Its action as an amebicide and as a general intestinal antiseptic is very difficult to understand when one considers the permanency of the chemical bond between the iodine and the quinoline nucleus unless there is some catalytic or comparable action taking place in the intestine.

Clinically my experience with this drug has been so encouraging that I am exhibiting it in many cases of intestinal disturbances presenting the characteristics of an unruly intestinal flora or a suspicion of a chronic low grade ameboid infestation.

In connection with this last mentioned condition I have come to the following conclusions:

1. That we have many remedies which will bring an active disturbance (associated with the discovery of many amebae in the intestinal contents) under quick control.

2. The continuation of cyst forms and a few active amebae after intensive medication, is much more common than generally realized. (To demonstrate the accuracy of this observation the exhaustive methods described above must be employed.)

3. The prevalence of "silent" infestations (without the usual clinical phenomena observed when the patient is made unwell because of the activities of amebae) is still an unexplored field.

4. The theory of the practicality of a quick and complete eradication of the *Entameba histolytica* will in the future be looked back upon as we now regard the *sterilizans-magna* theory

of Ehrlich when he was working on the development of Salvarsan.

5. A practical, safe, non-toxic, amebicide and "intestinal antiseptic" is highly desirable for routine use in the treatment of active cases, and cases during the interrupted treatment, of amebic infestation. At this time Diodoquin, in my opinion, meets these requirements.

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AMEBA HISTOLYTICA MASKING ESSENTIAL PATHOLOGY

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Interest in amebiasis revived by the recent Chicago epidemic has lead to meticulous examinations of stools in many patients whose symptoms might be even remotely related to those of amebiasis. So many publications have stressed the embarrassing and even serious errors due to overlooking of amebic infestation that the finding of amebae after a fervid search has been taken to explain the symptoms of many a baffling illness. The search for the underlying pathology often ended too soon with the triumphant finding of amebae in the stool.

Many a neurotic patient having sought for years the cause of a functional illness exults over the report of an inspired laboratory technician that amebae, presumably histolytic, exist in the patient's stools.

In my experience it would be well to halt this enthusiasm with the sober query, "Are the amebae really responsible for this patient's illness?"

Mr. H. had shown gross red blood in his stools for

several weeks. He had also had some generalized abdominal pain. Complete examination including x-ray of the colon had resulted in the only positive finding of ameba histolytica in his stools. No ulcers could be seen with the sigmoidoscope. Complete elimination of the amebae by the usual management did not stop the slight but constant bowel hemorrhages. A later x-ray showed definitely a carcinoma high in the sigmoid.

Mrs. M. had a history of abortions. She had low abdominal pain. Her findings suggested subacute pelvic peritonitis. Ameba histolytica was constantly present in the stools. With the sigmoidoscope the bowel membrane was found to be uninfamed. Following the use of emetin and chiniofen the amebae disappeared and did not return. The patient's pain, now determined to be due to subacute parametritis, persisted.

A man of 40 years dined frequently in loop hotels. He complained of generalized abdominal pain, fatigue and pallor. He used ethyl gas exclusively in his large car. Due to some defect in the mechanism there was such a constant escape of vaporized gasoline into the interior of his car that it was necessary to keep his car windows open. He had a moderate hypochromic anemia and the excretion of lead in his urine and feces was constantly increased to ten times the normal figures. On one occasion the feces sent for quantitative lead analysis were accidentally sent to the bacteriological laboratory. The bacteriologist found ameba histolytica in large numbers. Examination of several more specimens of stool showed ameba histolytica to be constantly present. The patient could not recall having had diarrhea. Pus or blood were never found in his stools. No ulcers were seen in the rectum or sigmoid. Emetin and chiniofen were given. The amebae were abolished without any improvement. The patient recovered when his plumbism disappeared.

A widow 36 years of age had complained of generalized abdominal distress for many years. She had taken cathartics for a long period. Although she had lived in a downtown hotel in Chicago during the World's Fair she had never had diarrhea. The stools were usually long and narrow. She had never seen blood in her stools. Her symptoms were always exaggerated by fatigue or nervousness. Her distress was relieved by belladonna and bromides. She complained of doctors never finding anything wrong with her. She disliked being called "nervous." Her stools contained large amounts of mucus but never showed pus. Proctoscopic examination showed no inflammation as high as eleven inches from the anus. When a zealous worker in the clinic of a large medical school finally was able to culture amebae from the stool the patient was triumphant. At last someone had found the cause of her complaints. She had now a just reason for being ill. Antiamebic medication did away with the organisms. This treatment caused an exaggeration of her symptoms. This patient did not have amebic dysentery. She had an "irritable colon" and the amebae were merely coincidental.

An unmarried woman of 32 had complained of abdominal distress to numerous doctors for many years. They had been unable to find anything organic to explain her symptoms. She had never had diarrhea nor

noted blood in her stools. Repeated x-ray and proctoscopic examinations had shown no pathology. Being tense and anxious, the diagnosis of "spastic colitis" or "irritable bowel" seemed entirely fitting. Ameba histolytica was found to be constantly present in her feces. She was made more miserable by the antiamebic medication. Her stools show no amebae on slides or in culture. Her previous complaints recur with fatigue, emotional strain or failure to adhere to the prescribed diet.

SUMMARY

I have described instances of carcinoma of the colon, pelvic cellulitis, lead poisoning and spastic colitis or irritable bowel with coincident ameba histolytica in the feces. In each case the finding of amebae masked or drew attention from the pathological basis of symptoms. Such errors are avoidable by recognizing and properly evaluating the carrier state.

The same tendency to overlook essential pathology occurs with a positive result to any other clinical or laboratory test. I have seen uremia and even pregnancy overlooked on the x-ray demonstration of a niche in the duodenal cap of a patient complaining of vomiting. In endocarditis or tuberculosis a positive Wassermann has served to confuse a diagnostician too laboratory-conscious.

It is granted that true amebiasis may be associated with any other disease. It must also be granted that ameba histolytica may be found in functional diseases symptomatically and etiologically entirely unrelated to the discovered amebae.

The finding of ameba histolytica must not terminate the search for other pathology.

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THE SURGERY OF RETINAL DETACHMENT

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During the past eight years beginning with 1929, we have operated on about 180 private cases of retinal detachment. To this number may be added some 55 cases more operated on by myself in the clinic or ward services at the Michael Reese Hospital and the Illinois Eye and Ear Infirmary, making a total of 235 cases. This has given us ample opportunity to observe both

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the operative difficulties one may encounter and the end results, which, of course are paramount to the patient.

We began in 1929 by using the Gonin cautery puncture methods exclusively, for in those days there was no other method. The technic at that time consisted of the usual anesthesia of the eyeball by means of novocaine, 2% solution, injected sub-conjunctivally following the local installation of one minim of cocaine Hcl 2% solution four times at two minute intervals. After exposing the sclera by appropriate incisions through the conjunctiva directly overlying the area where the retinal tear had been previously localized by means of the ophthalmoscope, a Graefe knife was thrust through the sclera and the hot Pacquelin cautery was inserted into this opening a distance of 2-3 millimeters and held there for from one to ten seconds. The conjunctiva was immediately sutured, atropine instilled and both eyes were kept bandaged for a period of two weeks or less.

The numerous serious complications that resulted from such drastic surgical interference forced us to turn to safer methods of procedure. Our technic was then altered to the extent that we began to use the electric cautery in place of the Pacquelin cautery, as this method reduced somewhat the intensive heat to which the eyeball was exposed. However, there still followed too many intraocular complications to warrant its unrestricted continuance.

About this time Larssen had published his first series of cases in which an adhesive choroiditis was induced by the superficial heating of the sclera to produce reattachment of the retina. At first we used either the Pacquelin or electric cautery directly upon the sclera to produce the necessary heat. Later we used the small ball electrode and a weak diathermy current to accomplish the same object. This was usually followed by puncture of the sclera to allow of the escape of the sub-retinal fluid, while in others it was hoped that the fluid would absorb. Theoretically, operations of this type should be ideal for flat detachments where the retina is elevated only such a small amount that the resultant swelling of the choroid will bring those two structures into opposition, despite the presence of a small amount of sub-retinal fluid.

As the end results were still far from desir-

able, we began to employ the Guist potassium hydroxide cauterization of the choroid through a trephine aperture in the sclera. This was probably the most difficult of all detachment operations from a technical standpoint, and one that could seldom be carried out as originally planned. There are few operators skilful enough to trephine the posterior sclera in as many cases as required without puncturing the choroid and allowing the eyeball to become too soft for further work. We further altered our operative technic by discarding trephination of the sclera and instead, incised the sclera fibers at right angles as in cyclodialysis, undermining the choroid with the tip of a cyclodialysis spatula, then biting out a V-shaped piece of sclera with a Herbert punch forceps. The exposed choroid was cauterized with the tip or sharpened end of a potassium hydroxide stick and neutralized with very weak solution of acetic acid applied on a finely wound cotton applicator. This punch method obviated somewhat the danger of puncturing the choroid and in our hands was somewhat safer than the trephine method.

The Guist method is very difficult and subject to interruptions during the course of the procedure. The chemical cautery is drastic and has the same objection of mass cauterization as has the Gonin. Intraretinal and vitreous hemorrhages are not uncommon and imperil the success of the operation, even though there may be an anatomical reattachment. The reaction of the eye to the procedure is very severe and the eye remains red and irritated for many months, longer, we believe, than after any of the other types of operation.

We then began the use of the Weve technic. By this is meant multiple punctures of the sclera with the long flexible steel needle with 50 to 75 milliamperes of diathermy current. The endeavor is made with this needle to lay a barrage of punctures around the hole or holes with the purpose of producing an adhesive choroiditis which will hold the retina in place. No endeavor is made to close the retinal tear with a single puncture as is done in the Gonin or Guist operations, but rather to produce an annular choroiditis, in the center of which is the hole in the retina. So, if the hole remains open, seepage into the sub-retinal area is impossible, because of the watertight circular adhesion that is pro-

duced. The number of scleral punctures with the Weve needle varied from fifteen to a maximum of thirty-five.

The Weve technic was a decided improvement upon the previously employed methods, especially in the ease with which it may be performed. However, we believe there are several reasons for the failure of this operation. In the first place, the long needle penetrates too deeply into the eye and frequently comes into contact with the retina. This not only produces a definite damage to the retina, but also fails to produce the requisite choroiditis. When a diathermy needle is introduced into an eye, the cautery effect is produced at two points, namely: at the tip of the needle, and at the point where it first enters the sclera. The contact of the remainder of the shaft with the intraocular tissues is without effect. In the second place, after the first puncture, subretinal fluid or even vitreous begins to seep through the hole left by the withdrawn needle and the eyeball soon becomes so soft that further manipulation is difficult, if not impossible. In the third place, the choroidal lesion produced by the Weve needle is a small round spot and it is very difficult to produce enough such small lesions close enough together to form a water-tight annular choroiditis.

The Safer method has never been employed as our other methods have been almost identical except for the type of needles used. It has given excellent results in Safar's hands.

Our experience with the Walker pins is somewhat limited as we have found the technic more involved and cumbersome than the technic with the so-called "Single Short Needle", which has been evolved by Dr. Harry S. Gradle, the needle used being fully described in the October issue of the *American Journal of Ophthalmology* for 1935. The technic of the operation has been borrowed freely from other sources.

The "Single Short Needle" technic which we have used for the past two years follows. A pre-operative sedative should be given in all cases. It is best to use a drug which will not result in nausea and vomiting following the operation, and for this reason the best pre-operative drug, morphine sulph. gr. $\frac{1}{4}$ and Scopolamine Hbr. gr. $\frac{1}{150}$, hypodermically, must be used with extreme caution or not at all. Nembutal grs. $\frac{1}{2}$, Sodium Amytal grs. $\frac{1}{2}$, or Dilaudid grs.

$\frac{1}{8}$ may be given one hour before operation. The pupil is dilated previously with atropine sulph. 1% solution, to obtain maximum mydriasis. This mydriasis may be augmented by the use of Synephrin 1% solution, instilled previous to operation. Our patients are operated on in a so-called flat cataract bed so that there is no necessity for removing the patient from an operating table. The bed is wheeled directly from the operating room into the patient's room. The conjunctiva and cul-de-sacs are irrigated with normal saline solution or oxycyanide of Mercury 1/10,000 solution in the usual manner. Contrary to the usual technic it is unwise to instill cocaine hydrochloride for surface anesthesia, as the resultant drying of the cornea will obscure any further ophthalmoscopic examinations either during or after the operation, and these examinations may be of vital importance in localizing the sites of the diathermy punctures. While there is no doubt cocaine does result in the best anesthesia, one may instill 1-2 drops of a 2% Butyn solution into the lower cul-de-sac, and shortly thereafter follow with a retrobulbar injection of 1cc. Novocaine, 2% solution, through the lower lid. This anesthesia is augmented by small injections of the same substance into each muscle through the conjunctiva. This usually gives a satisfactory anesthesia. A drop or two of Adrenalin chloride 1/1,000 solution instilled into the cul-de-sac will result in an almost bloodless operative field. The lid speculum is inserted and a curved incision made through the conjunctiva about 10-12 mm. from the limbus and overlying the area containing the tears or the elevated parts of the retina. The recti-muscles encountered in this dissection are carefully isolated and a guide or bridle suture is placed under the muscle insertion and fixed with a hemostat at its distal end for easier manipulation during the operation. The sclera is laid bare and clean directly over the area where the diathermy punctures are to follow. The eyeball is retracted by aid of the bridle sutures so that the extreme posterior part is made easily visible and accessible to the diathermy needle. The speculum is now removed and the lids and incised conjunctiva retracted by means of large muscle hooks or rubber composition retractors, aided by flat spoons inserted into the depths of the wound. One can reach 20-22 mm. posteriorly by this easy method

without severing any of the recti muscles, which naturally obviates any chance for a diplopia resulting from an incorrect muscle suturing. The sclera is dried by cotton sponges. The single short needle is now applied to the desired area, the number of punctures depending upon the size of the area to be cauterized.

The principle of this technic is based to the greatest extent upon the Weve operation, except that the attempt is made to isolate the portion of the retina that contains one or more holes from the remainder of the retina by means of a continuous line of adhesive choroiditis rather than a series of isolated patches. The curved shape of the insulated portion of the needle permits of scleral punctures as far posteriorly as desired.

The single short needle is not plunged through the sclera with current on as is the Weve needle. Instead of being introduced into the sclera radially with complete perforation into the choroid, the needle enters the sclera at an angle of about forty-five degrees, that is, about half way between the radial and the tangential position. In as much as the needle is only one and one-half millimeters long, it is impossible to perforate the sclera in this position. Instead, it produces a linear cauterization rather than a purely punctate affair. Thus, if the insertions of the needles are close enough together, there results a continuous linear searing of the sclera and a linear adhesive choroiditis. In that way, a water-tight line, either single, double, or treble, may be produced that will completely isolate the desired portion of the retina. Of course, the sclera must be punctured in one or two places to allow of an escape of the subretinal fluid so that the retina may fall back upon the adhesive choroiditis. These sclera punctures are made with a Graefe knife, the knife being rotated to allow a sufficient amount of subretinal fluid to escape.

The objection has been raised that with this method, the subretinal fluid or vitreous escapes through the punctures and allows the eyeball to become too soft to permit of adequate punctures. If the needle is inserted through the sclera obliquely as described, not a drop of fluid is lost until desired as there is no communication established between the subretinal space and the outside. Repeatedly we have made as high as

eighty punctures without lowering the intraocular tension. We have found it advisable to make the last three or five punctures radially through the sclera to establish fistulization of two or three days duration, over and above that produced by the Graefe knife puncture. After these punctures, the eyeball does become soft.

The retractors are now removed, and an ophthalmoscopic examination is made to ascertain the locations of the diathermy punctures. The speculum is now replaced and the conjunctiva sutured with a single running suture which is not tied at either end, but left loose, so it can be easily removed without any discomfort in 6-7 days. Atropine sulph. ung. 1% is placed in the cul-de-sac and both eyes bandaged. The current used is of approximately 45-60 milliamperes. The patient should be perfectly quiet for the first 3-4 days at least. For detachments in the upper half of the retina, the foot of the bed is elevated six inches or more; with lower half detachments, the head of the bed is elevated or the patient is allowed to lie on a first notch back rest.

We dress our cases daily, but believe that it is best not to do an ophthalmoscopic examination during the first 4-5 days following operation.

There are a few points in the after care that are important: absolute bed rest for at least two weeks after operation is essential. During that time both eyes are bandaged. Hole spectacles can then be used, but the hole should not exceed two millimeters. This can be gradually enlarged so that at the end of another three weeks, the hole is 10 millimeters in size, reading must be avoided and atropine should be used for at least four to eight weeks. Physical exertion must be kept to a minimum and all jolts and jars are dangerous. No attempt to resume normal habits of life should be made for at least ten to twelve weeks after operation.

If the first operation is a failure so that a second surgical procedure is indicated, it should not be done too early. We know that there is a delayed or slow action in many of these cases that are treated with diathermy and ultimate reattachment may not occur for many weeks. While waiting to perform the second procedure, the patient must be kept physically inactive and the eye must be kept at rest with atropine and hole spectacles. Empirically one may say that

the second operation should not be done until at least two or three months have elapsed after the first.

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DISCUSSION

DR. HARRY WOODRUFF, Joliet: I think this method Dr. Meyer suggests, the use of the diathermy needle of Dr. Gradle is promising, because if anyone has attempted to perform the Walker operation, putting in all those platinum points, you know how tedious it is. The technic is difficult, and the likelihood of one or more of the points coming out when you are operating, letting out some subretinal fluid—the very thing you do not want to happen—is great. It is encouraging to know that we have at least 50% chance of cure. I approve of the anesthesia mentioned. I have used avertin with satisfaction. I believe it saves the operator as well as the patient a good deal of strain.

DR. C. B. VOIGT, Mattoon: One of the most important things that has happened in recent years in eye surgery is the development of the effective methods for the cure of retinal detachment. And our enthusiasm on account of the results that are being obtained is well justified. We are probably all in accord with the idea that the principles on which the operative procedures depend is the proper one, the idea being of course to get a reaction in the choroid with the hope that the inflammatory process will cause adhesion between the choroid and the retina. For many years such means as the actual cautery to the sclera both with puncture and with the electrolysis and injections of iodine were used, but no definite technic was followed up persistently until Gonin made known his procedure and announced his results. There is no doubt that we now cure a large percentage of retinal detachments.

It is not at all likely that any of these procedures, such as using the cautery puncture or the chemical cautery, or even some form of electrocoagulation, will be the final procedure adopted. The difficult problem is to produce permanent adhesion between retina and the choroid with the least possible traumatism. I am sure that from time to time we will have presented ways and means of carrying out this principle in handling a retinal detachment which will do much less injury to the eye than those previously practiced.

The consensus of opinion at present seems to indicate that thermo-puncture is the most effective surgical treatment of retinal detachment. The action of chemicals such as strong caustics, potassium hydroxide and the like, the use of the actual cautery with its mass production of heat, etc., are more difficult to control, especially in an already disturbed eye, than heat applied under control with the diathermy needle.

The essayist brings to our attention one more method—or shall I say modification with refinements of the earlier diathermy procedures. The curved shape of the needle gives greater ease and accuracy in placing the scleral punctures; the diagonal line of application through the sclera without entire perforation of this anatomic structure; and the circular placement of the

needle applications with the ring-like effect of cohesive retinitis produced, are to be commended.

Dr. Meyer is to be congratulated upon the splendid presentation; his clear, lucid, concise statements which are readily followed, and the short description of the preparation of the patient, the production of anesthesia and the simple yet effective exposure of the field, are models of brevity and conciseness. Practically all the objections to previously described operations are obviated, the eyeball retains its tension until the ring of scleral punctures is complete and the operation almost finished, and the final punctures for the escape of the subretinal fluid made, which of course is attended with softening of the eyeball. I am sure he must have especially good results in the restoration of vision following this technic, and we would have been pleased to have a short report of his cases to date. Perhaps we may be favored with such a report at a subsequent meeting of this section.

DR. O. B. NUGENT, Chicago: I was very much interested in Dr. Meyer's presentation. He has brought up some points which are unusually valuable. Personally I quite a while ago discarded the ammeter from my machine. I believe we can tell better the type of coagulation we are getting of the sclera by simply watching the ring formation around the needle. I have used in recent cases with better results the one-meter wave length, without the indifferent electrode. In that way I get much better coagulation in a shorter time. It is not so deep that it produces any over-coagulation of the choroid, unless I leave the current on long enough. This can be controlled. If the patient has a thick sclera a longer application will produce deep coagulation. It is necessary to use less in cases of myopia because the sclera is thin, and sometimes it is not advisable to use the needle at all. Following the completion of the punctures I find a great deal of value in making two or three trephine openings. With the motor driven trephine one does not have to depend on intraocular tension to produce a trephine opening in the sclera.

DR. D. C. ORCUTT, Chicago: I have been learning caution during the past two years. Prior to that time we used various methods, used the Walker with indifferent results, but during the past two years I have found it is well to watch a case a day or two or more, before operating. For that reason we put them to bed. We have made a schematic drawing of the detachment prior to putting them to bed. It is surprising the number of detachments that subside. They go down almost to nothing if you keep the patient perfectly quiet. Then without disturbing them or letting them sit up, put them on the table, and I have a very fine cautery point, almost needle-like in size, with which I make one or two trephine openings, $\frac{1}{2}$ to 1 mm. in size, over the point decided by the schematic drawing or the hole if we have been able to locate it, and first we touch with this fine needle in the trephine opening, possibly not do more than puncture the choroid, but carrying it around and forming coagulation and then making several punctures around the opening. The success we

have had in some one-half dozen cases in the last year has been very flattering by this method. I had a letter from one patient, a farmer, the other day. He was sent home in February and he tells me he is working every day on the farm and so far as he could tell that eye was about as good as the other one.

DR. M. L. FOLK, Chicago: There is one thing that has not been described here—it is not used in this country—that is the circular button Lindner uses around the limbus. It has prongs attached to it, the prongs coming out from the center, and when the tear is localized the end of the prong can be placed over the scar. Even when the eye is dislocated it can be used to identify the meridian; otherwise, when the eye is turned you lose the meridian. I brought one from Vienna in 1930 and have found it of great help.

Dr. Meyer's paper has been very interesting. I would like to ask one question about this new Gradle electrode. We know the sclera has different thicknesses at various parts, and is thicker toward the equator. If you use the same electrode how do you gauge the amount of penetration into the sclera? When you go through the sclera, and you touch the choroid you know you are going to have an adhesive choroiditis, but if you do not do so, you will not get this adhesive choroiditis.

DR. S. J. MEYER, Chicago (closing): I am glad that Dr. Woodruff took up the discussion of anesthesia. There are some patients you cannot anesthetize properly and perform the operation upon with any success. I know of one ophthalmologist who has operated on a girl three times, and all three times she screamed during the operation. Avertin can be used; how safe it is I do not know. They have had two fatalities at Michael Reese Hospital and they are afraid of it. Meesman of Germany advises sodium evipan, which is a barbitol product, injected intravenously. It does not work long enough for an operation like retinal detachment. Sometimes you can perform the operation in twenty minutes, but sometimes you cannot, and if you repeat the anesthesia you lose control.

It is important not to repeat the operation too early. An instance of that was brought to my attention several weeks ago. He was a doctor who had moderate myopia and a definite tear in the upper quadrant. I did what I thought was a perfect operation, making about twenty-five punctures. Everything looked flat. I could see where I made three or four punctures, areas of chorio-retinitis showing through. He was kept in bed for nine days, and I noticed I could see something white through the pupil. After the fourth day there was a complete choroidal detachment—besides the original retinal detachment which had not flattened down. I sent him home. In the first nine days the choroidal detachment did not disappear. After about four weeks he returned, just two weeks ago, with complete reattachment of the choroidal detachment and complete reattachment of the retinal detachment. I saw him Saturday, six weeks after operation, and the entire retina was flat. Unfortunately he will probably develop a central scotoma because it already shows some change.

You usually get a soft eyeball following operation and if you go in too soon you will have a chronic uveitis develop.

Many hospitals cannot afford a Walker outfit, and you do not need one. All we use is the diathermy machine that belongs to the hospital and the needle costs about \$7.00. You must use the smallest amount of current you can get through the large machine. As to how much to perforate the sclera—you soon learn how to go deep enough and yet not too deep. As to whether you have to go through one-half or two-thirds of the sclera to produce an adhesive choroiditis, I do not know. I think one should err on the side of safety and not go too deep.

THE TREATMENT OF OPHTHALMIA NEONATORUM

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Ophthalmia neonatorum is a term which includes all infections of the conjunctiva occurring in the newborn. Reports differ as to the number of cases of ophthalmia neonatorum that are caused by the gonococcus. Lazar's¹ report states: "That of 86 cases, 36 cases or 42% were caused by the Neisser's organism; the remained showed either no organisms or one of the following: pneumococcus, staphylococcus, mixed organisms, Morax-Axenfeld bacillus, and inclusion bodies."

Ohio reports (The Sight-Saving Review²) "That 1059 cases of ophthalmia neonatorum were reported during 1933, of which 21 were due to the gonococcus." This report is of 188 cases of ophthalmia neonatorum which were treated at the Cook County Hospital in a period extending over three years. Eighty-five cases or 45% were due to gonorrheal infection. The remaining cases were due to other causes and are grouped under the term of non-specific conjunctivitis. Emphasis here is placed upon the gonorrheal type.

Of the 85 cases of gonorrheal ophthalmia neonatorum, 38 were born at the Cook County Hospital. During this time there were 13,132 births at this institution, a morbidity of less than 0.3%. Since the patients are of the lower strata of society and are of a group in whom venereal infection is quite common, this incidence is very low and is comparable to the morbidity in other hospitals. (Before the use

¹Read before the Section on Eye, Ear, Nose and Throat, Eighty-sixth Annual Meeting, Springfield, May 20, 1936.

of prophylaxis, Crede³ stated "that the incidence of ophthalmia neonatorum was 13.6%").

The treatment of ophthalmia neonatorum of gonorrheal origin is mainly a problem in prevention and should begin during the prenatal period. Lehrfeld⁴ reports "that in two hospitals, where the expectant mother is treated for gonorrhea, the incidence of ophthalmia neonatorum was seven to ten respectively per thousand births. In two other hospitals where no routine procedure is carried out to discover gonorrhea in the expectant mother, the incidence was 61 and 36 per thousand births. However, stressing of the prenatal care must not be allowed to lessen the emphasis on the use of a prophylactic.

What drug should be used in prophylaxis? In spite of such reports as Chambers⁵ who advocates the use of 1% mercurochrome solution, and Mayou⁶ who relies on protargol or acriflavin oil for prophylaxis of gonorrheal ophthalmia neonatorum, and many similar reports, the consensus of opinion is: that silver nitrate is far superior to all substitutes.

At a meeting of the New York State Commission for the Blind on March 2, 1934, there was a unanimous agreement by all physicians present that silver nitrate should be used and no substitute be permitted. S. R. Gifford⁸ writes: "As to the efficacy of argyrol in mind, one must consider its use for prophylaxis as nothing more than an irrigation, which is as likely to carry gonococci into the sac as to wash them out. The establishment of such a procedure as a routine measure in hospitals is a complete abdication of the idea of prophylaxis, and ophthalmologists should insist on the use of either a 2% silver nitrate neutralized by normal saline after 15 seconds or 1% silver nitrate not neutralized."

The routine treatment carried out at the Cook County Hospital is as follows: Any secretion or inflammation appearing in the eye of a newborn is viewed with suspicion. An epithelial scraping is made (this is necessary because at an early stage of the disease organisms are seldom found in the discharge. The gonococcus is an epithelial parasite and does not appear in the discharge until these cells are cast off).

All suspicious cases are immediately isolated and treated as cases of gonorrheal ophthalmia neonatorum. Until the gonococcus has been

found, the infants are separated from the proved cases. Thus much valuable time is saved in instituting treatment which is a point of great importance in the prevention of corneal complications.

The first consideration in the treatment of the gonorrheal infection is to keep, by means of frequent irrigations, the eye free from discharge. Retained purulent discharge has a lytic effect on the tissues and it is important that no such process be permitted to take place on the cornea. Irrigations of the eye with saline or boric acid solutions are carried out every thirty minutes or even oftener day and night. As the discharge lessens the frequency of the irrigations is diminished. It is needless to say that care must be exercised in order that the cornea is not injured during this procedure. Such an accident may occur from inexperienced turning of the lids, or directing a strong stream of fluid upon the cornea, or contact of the cornea with the tip of the nozzle.

In nearly all cases except the very mild ones, foreign protein in the form of milk boiled for three minutes and then cooled to body temperature is used. The amount of milk that is usually injected is from 1 to 2 cc. depending upon the size of the infant. The injection is repeated every second or third day, if necessary. In this respect Redding's report is of great interest. Redding injects 1 cc. of the mother's milk without previous boiling. He states, "that the results are so remarkable that no other treatment is necessary except ordinary cleanliness."

The chemosis and discharge are greatly lessened after the use of milk, thus there is seldom the need for performing a canthotomy in these cases.

What antiseptic should be used? The antiseptics most commonly used in the treatment of gonorrheal ophthalmia neonatorum are silver nitrate and the silver protein salts. Silver nitrate is of little value in the early cases, it seems, in fact, to increase the amount of swelling and discharge. Argyrol, one of the organic silver salts, appears to be worthless, as is shown by the data that follows.

Because of the large number of preparations on the market and the limited number of cases, one can test a few mucous membrane antiseptics only. The antiseptics used were the following:

Aqueous solutions of acriflavin 1-1500 and Metaphen 1-2500, Mercuric oxycyanide 1-5000 and Argyrol 10%. The antiseptic solution was dropped into the conjunctival sac of the eye that appeared to be the worse. It was used three times daily.

		Number of Days Required to Obtain Two Consecutive Negative Smears							
		Number of Patients		Number of days				Average	
Irrigations and	1-1500 Acriflavin..	9	16	36	20	31	7	46	16 15 10 22
Irrigations alone.....			22	36	50	48	5	77	20 28 55 38
Irrigations and	1-2500 Metaphen...	4	66	29	30	17			31
Irrigations alone.....			64	14	45	17			35
Irrigations and	Merc. Oxycyanide								
Irrigations alone.....	1-5000 solution.....	4	30	50	25	41			36.5
Irrigations and			46	72	25	41			46
Irrigations and	Argyrol 10%.....	3	33	65	44				47
Irrigations alone.....			30	65	37				45

A study of the above table shows that solutions of 1-1500 Acriflavin, 1-2500 Metaphen and 1-5000 Mercuric oxycyanide shortened the period of morbidity sixteen, four and ten days respectively. Argyrol had no appreciable effect in this respect. Further work along this line is to be continued.

Complications and their treatment. Of the 85 cases of ophthalmia neonatorum only one developed a corneal complication while under treatment and this was readily controlled by a delimiting keratotomy. Only a slight scarring of the cornea resulted. Four infants entered the hospital with involvement of the cornea; in one this condition was bilateral.

A diffuse corneal haze seen in severe cases with marked chemosis which is due to an edema of the cornea should be differentiated from a true corneal infiltration, which is usually well defined in character. The former condition requires no special treatment while the latter condition necessitates immediate energetic measures if the eye is to be saved. In addition to the use of atropine, the area, if small, is treated with trichloroacetic acid as described by Gifford. If the condition progresses, a delimiting heratotomy is performed. The wound is opened daily by depressing the lips which allows the aqueous to escape. When the ulceration of the cornea is extensive or if there is an impending spontaneous perforation, a sliding conjunctival flap is drawn over the cornea. This procedure by bringing a fresh blood supply to the cornea arrests the ulcerative process and prevents the escape of the crystalline lens.

CONCLUSIONS

1. The treatment of gonorrheal ophthalmia neonatorum is chiefly a problem in prevention.
2. No substitute should be used for silver nitrate in carrying out prophylaxis.
3. In the order of their importance in the treatment of gonorrheal ophthalmia neonatorum are irrigation, foreign protein therapy and the use of antiseptic solutions.
4. Silver protein salts have no place either in the prophylaxis or in the treatment of this condition.
5. Finally, the use of a 1-1500 acriflavin solution has been found to shorten the period of morbidity.

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DISCUSSION

DR. M. L. FOLK, Chicago: The treatment as outlined by Dr. Bellows is the generally accepted treatment throughout the largest hospitals. I think one thing should be stressed—the determination of whether it is specific or non-specific plays an unimportant rôle. We have had corneal complications and loss of eyes in non-specific as well as specific cases, and most of the series studied will show only 45% of Neisserian infection, and yet we get the same complications and loss of the eyes. The infant has not acquired any immunity yet and even mild infection with colon bacillus or pneumococci has caused the loss of many eyes. Therefore, all cases should be treated as if of gonorrheal origin.

I think we irrigate the eyes too often. Every thirty minutes is too often; it disturbs the child too much and lowers its resistance which will not help in the recovery of the eye. Every two hours is sufficient. Dr. Wilder once questioned me on this, and he said he had seen the loss of eyes due to too frequent irrigation. You can wash it off with boric acid externally, but so far as irrigating it, I believe it is harmful if done too frequently. We have had as good results with mercurochrome used four or five times a day (two per cent.) as with acriflavin.

In Dr. Bellows' series some cases where irrigations alone were used had a convalescence of thirty to thirty-five days, the same as when medication had been used. This shows you cannot rely on statistics. I think both mercurochrome and acriflavin are good, in addition to milk. Foreign protein works well in conjunctivitis, but it has a deleterious effect on the cornea once the

disease has involved the latter; before that it is of great value.

DR. H. C. EASTMAN, Galesburg: I would like to ask Dr. Bellows what method is used for opening the infant's eye, and also if he uses ice?

DR. JOHN G. BELLOW, Chicago (closing): To open an infant's eye we use the following method: A toothpick with cotton wound tightly at its end is placed at the lid margin and with a twisting motion the lid is rolled away from the eyeball. This exposes the cornea.

EARLY MANIFESTATIONS OF MENTAL DISORDERS

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This paper deals with the problem of the recognition of impending mental disorder. Well marked symptoms of insanity are usually appreciated but the question to be considered here is whether one can suspect the approaching illness before profound manifestations appear.

One might take up each of the more common psychoses and tabulate those changes which were noted at first. It is the belief of the writer that a better understanding of the problem will be had if it is approached by a consideration of the so-called "normal mind" and an attempt to indicate the change which occurs when disorder develops. If this method is followed it is necessary to discuss personality factors. This will be done very briefly. For an adequate consideration of personality the reader is referred to the numerous illuminating articles which have been written on the subject. This paper is, in intent, descriptive rather than analytical.

Some of the attributes of the ordinary mind are; consciousness, stability of mood, judgment, memory, interest, integration, and the ability to sublimate.

No one should expect that in any individual such qualities as those just mentioned will rate 100% at all times. Besides a lowering of the usual efficiency of these qualities there are many features that suggest that all is not ideal in the functioning of the nervous system. A few of these are; apathy, excitability, anxiety, insomnia, fatigability, suspiciousness and the unsociability. These are common. The fact is that if irritability, anxiety, insomnia or jealousy, to mention

these features at random, indicate a faulty adjustment most all of us are guilty at times. Yet it is true that any one of these may be a symptom of early, or late, mental disorder.

What can be said that will bring some sort of order out of the apparent confusion in the foregoing statements? Unfortunately there is no yardstick which unerringly will measure mental symptoms. Yet there are hints that may be helpful.

The ordinary make-up of the individual may show such degree of conflict or difficulty in adjusting adequately to common problems that a flight from realities seems a distinct possibility.

An apparent change in disposition is one thing that may put the family or the physician on guard. The fact that a man who previously had shown little tendency to irritability begins to show marked irascibility is worth noting. Frequently early symptoms of mental disease are shown not by what seems to be an alteration in type of disposition but by an exaggeration, either in intensity or duration, of characteristics previously noted. A word of warning may be given here. A patient who has shown a definite change for a period of several weeks may manifest no unusual traits on many days during that period. In such cases much depends upon an authentic history. It is quite unfair to the physician to expect a definite opinion given merely on the basis of one examination. It is true that mental disorder seems to develop abruptly at times but careful inquiry will in many instances reveal changes in speech and behavior which passed unnoticed at the time.

One question that is worth considering is how disabling a personality feature has become. Can the individual control his irritability enough of the time that he continues to hold his family and his business together or is he so unpleasant that he is gradually driving away all on whom his satisfaction in life really depends. Does a person realize his day-dreams are indulgences which must be squared with realities if they are to pay dividends or, if not, at least recognized as wishful thinking, or are they so fantastic and demanding that the subject can no longer remain oriented to reality. In a word do the personality features prevent a passable adjustment to domestic, social and economic life.

It is well to make inquiry regarding the oc-

currence of precipitating factors. One expects a person may not be quite as usual after a failure in business, a death in the family, or an exhaustive illness. The history of the reaction following similar stresses in the past may be enlightening. It may be found that the individual is showing so much greater change at present than following a like stress of five, ten or twenty years ago that one is suspicious that a profound alteration in ability to remain stable has occurred. Or following a previous stress the person may have developed a definite mental disorder and one appreciates that similar strains sustained by this individual may again precipitate a psychosis.

The foregoing remarks are made with the hope that although very general in character they may aid in the detection of signs which indicate the possibility of the development of psychic disturbances. If one goes a step further the various types of mental disorders come to mind. This paper is not concerned with classification. There are too many different types to present here but brief reference to some of the more common disorders may help in illustrating their development.

As is well known, paretics in the early stages of the disease may have symptoms of the psychoneuroses, of a manic or a depressed state, or manifest a general lowering of vigor with leveling of the emotions and interests. Early judgment defect may be shown by delinquencies and business ventures of a type which are entirely out of keeping with former principles and practices. Even in paresis there may be some similarity between the symptoms shown and the usual personality but the study of the personality is less illuminating than in the functional disturbances. The fact that there is a definite change in the personality is the important feature.

Manic attacks may develop rather abruptly. Not infrequently the disorder is mild in the early stages or even throughout. There is increased activity which is shown by restlessness and by a tendency to talk more and to do more. Distractibility is indicated by the variety of plans, actions and subjects of conversation. The patient is inclined to be expansive with considerable impatience and irritability. She seems logical in speech and action until one reviews the

activities over a period of time. Then the exaggerated tempo of her condition stands out clearly. Perhaps it is only when one views the condition in this manner that the disorder is recognized. Until placed under management these patients lead a merry life, and those who are responsible for them lead a full life but not a merry one.

A few cases may be cited. No attempt will be made to give an adequate case history. The purpose is to illustrate in an abbreviated manner the development of the psychoses. It is hoped that the transition during stress of a particular type of personality into a psychosis will be indicated.

M. A.—There was a history of dysmenorrhea and migraine. Although she "liked to cut-up" and was jolly, social and a leader in play among friends, she tired easily and became depressed when fatigued. After heavy work she did not feel her usual self for a day or two. She was sensitive and if criticised would go off by herself and cry. While backward among strangers she was not seclusive and did not day-dream.

When at the age of 17 she obtained work calling for energy required of an adult she gradually showed fatigue and depression an increasing proportion of the time. She felt she had to drive herself to work to keep going. On advice she quit work and was treated by a physician for whom she formed an unwise and unreciprocated attachment to which she evidently could not adequately adjust. She became melancholy and stubborn; would lie in bed for days without eating and spoke of suicide. Increasing severity of the condition led to commitment at twenty-one and a diagnosis of the depressed phase of manic depressive insanity.

No one's personality is so simple that it can be described in a few words or adequately identified by any sort of "rubber-stamp" label. It can be said however that M. A. showed an emotionally unstable make-up, and the statement regarding her love affair indicates a lack of ability: first, to avoid unwise entanglements and; second, to extricate herself from them without such upheaval as was manifested by a psychosis.

V. S.—This patient was seclusive; walked alone and kept to herself. She had no friends of either sex. She did not care for picnics or dances and if company came to the house she would not eat at the table with them. She talked very little, cried readily and was apt to go to her room saying everybody "jumped on" her. She did not like to read stories but did read prayer-books and liked to go to church.

At thirty after a disappointment in love, the patient disappeared one night leaving a note in which she said she was going to take her life. She returned the next day saying she had walked all night but did not remember where she had been. A cousin said she became

"mixed in her head" at this time. She ceased work and frequently went to church to pray. She said she did not wish to see anybody, remained in her room a large part of the time and was in bed a great deal. She developed the idea that people talked about her and that they said she couldn't go to work. At this time she was committed and showed symptoms which led to the classification of dementia praecox, hebephrenic type.

Here, as is true in regard to other cases mentioned in the paper, the personality is not fully described but is merely hinted at in a brief sketch. Yet one gains the impression that V. S. developed no real interests and that while day-dreaming is not mentioned, the absence of contacts and interests would tend to lead her into fantasies. Her reaction to the thought that others jumped on her suggests a lack of even half-hearted defense. One would suspect she was not well able to hold a lover and that if he were faithless she would be driven yet further from adequate behavior.

F. M.—This patient was a successful and skillful dress-maker; a very good worker. She did not get along well with strangers, was not sociable, and had no friends. She lived and worked with a sister and was the leader of the two. While not so quick tempered as the sister, when angry she remained so longer. She took a personal view of any restrictions and accepted without question her sister's statements if the latter had any difference of opinion with others. There was a lack of ability to consider others when her own wants or those of her sister were in question.

According to the patient at the age of thirty-eight she patented a certain style of petticoat. The same style was placed on sale by a large store. Legal action on part of patient stopped the sale and the store having suffered a loss thereafter persecuted the patient in various ways. After demanding a seat in a street car before she would pay her fare the street car company also began to persecute the patient. The delusional trend widened to include the bank in which the patient deposited her money and of which the owner, of the store mentioned, was a director. The delusions later included newspapers and almost every thing which touched her life. Hallucinoses and finally a refusal to go out of the house and to pay rent led to removal to an institution.

Even in so brief a sketch as the foregoing one can see the evolution of a paranoic personality into a paranoic psychosis.

M. M.—This patient had severe headaches at the menstrual periods. She was not of a dominant type but while not as social as most she was not seclusive. There is no history of a tendency to day-dream although she was apt to keep "serious thoughts" to herself. She was a light sleeper—would nap during the day but get up at night and do some work.

At twenty-nine after the father had serious financial

difficulties the patient suffered from a nervous disorder lasting one year.

At thirty-eight there were a number of unusual stresses. The husband had to change his occupation several times and this bothered the patient greatly. One child had an appendectomy and another a tonsillectomy. During the illnesses the patient spent much time with the children and lost sleep. She tried to stay awake so that she could fan them, the weather being hot.

When the children returned from the hospital the patient seemed to "give up." She appeared weak, laid about the house and slept a great deal. On occasion she talked volubly of matters which had worried her, a reaction unusual for her. She began to be absent minded and stared into the distance. The speech became irrational and at times she did not seem to recognize people. Later a more definite clouding of consciousness with sense-falsifications led to the classification of an exhaustion delirium.

In this case a lack of vigor would seem to stand out as a prominent feature in the make-up.

If an attempt is made briefly to summarize the contents of this paper it may be said that in the effort to recognize the possibility of oncoming mental disorder, a history of the usual personality features of the individual, inquiry as to the occurrence of especial stresses, and particularly an evaluation of recent changes which may be shown in the personality, are of value.

INTRAPERITONEAL AND VISCERAL TEMPERATURE VALUES AS IN- FLUENCED BY EXTERNAL ENVIRONMENT

BRYANT R. SELDEN, M. D.

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The custom of applying heat or cold to the abdominal wall for the relief of pain within the abdominal cavity is very ancient. That this method is often effective is a fact of common knowledge. The careful observation of intraperitoneal changes of temperature when heat or cold is applied externally seems a logical step to ascertain the mode of action of these physiotherapeutic agents. In arriving at the data which are here presented guinea pigs and rabbits were used in the laboratory, surgical patients in the operating room, and a few medical patients in the wards.

Thesis submitted by Dr. Bryant R. Selden to the Faculty of the Graduate School of the University of Pennsylvania in partial fulfillment of the requirements for the degree of Master of Science in Surgery.

Investigations carried on in the clinical and pathological laboratories of St. Luke's Hospital, Bethlehem, Penn.

Our thermoelectric determinations were made by means of a portable thermoelectric apparatus constructed to suit our individual requirements by Dr. B. McGlone, of the Department of Physiology, Medical School, University of Pennsylvania. Dr. McGlone has done much original work with thermocouples, and both by theory and by application has found insulated constantan and manganin wires of No. 26 gauge to work the most satisfactorily. We had four special electrodes built, and were then equipped to determine the temperature of any tissue of the body. The terminals were detachable, and before use in the intraperitoneal cavity of a patient they were autoclaved at fifteen pounds pressure for twenty minutes. We had no deleterious effects from these determinations in any of the fifteen patients examined on the operating table, or the two medical cases (ascites) examined in the ward. In the special terminal constructed for these latter two cases a No. 14 French catheter was used.

Standardizations of the thermocouples were made daily. It was found that in all the terminals except the skin terminal there were at times marked shifts of the apparent zero (i. e., parasitic currents). In the skin terminal the changes were not so great. Marked variations in normal temperatures, at least in the external temperatures, came from the struggles of the animal which had just had a subcutaneous injection of sodium amytal followed by the insertion of a rectal thermometer. The animals which did not resent this routine procedure had no marked rise in temperature. Hence, the more nearly accurate temperatures for undisturbed guinea pigs would be those of the lower values.

The determinations were made upon the animals while they were under the influence of small doses of sodium amytal, injected hypodermically, and repeated as needed. Just enough was given to prevent the animals from moving and suffering pain, except in the use of the diathermy in which case it became necessary to give very large doses to prevent excessive hyperventilation, as the hyperventilation tended to lower the temperature. Thus the experimental responses of the animals especially in the application of heat and cold approached those of the true responses of patients. In taking all determinations upon the animals each animal lay

upon its left side, the abdominal incision was made in the center of the midline, and cold or heat was applied to the right (or upper) side.

Always upon opening the peritoneal cavity the temperature noted there would be less than the temperature found—using the same terminal—between the legs or upon the upper body surface. The cause was presumably the entrance of air at a lower (room) temperature. The temperatures recorded in the tables were *maximum* temperatures, i. e., the terminal would be held in the same place for from three to five minutes—in all cases until there had been a full minute of contact with no further rise in temperature. Hence these tables represent selected values from great numbers of individual observations. The great variations and low values of the rectal temperatures were possibly caused by fecal contamination. Because of this same great variability, the rectal temperatures were not considered to be of great significance. They were included in the tables because of the interest in their variations, and to show that the ordinary use of a rectal thermometer, contrary to the opinion of some, may be as full of errors as the use of the oral thermometer.

EXPERIMENT ONE—TEST OF NORMALS

The normal intraperitoneal temperature of the different regions was found to vary somewhat in the different individual animals. In practically all instances, both with guinea pigs and with rabbits, it was noted that a very warm location was just beneath the upper parietal wall. The temperature in the center mass of intestines was usually the same or very slightly lower. The temperature in the pelvis was usually slightly lower than that of the right (upper) side; and the temperature with the terminal against the diaphragm was usually equal to or slightly above that beneath the upper parietes. The comparative temperature values above the lower parietes varied considerably, probably influenced by the temperature of the table upon which the animal lay. The temperature just inside the peritoneal cavity was lowest of all. If the opening was small and the viscera undisturbed for a period of time this value tended to more nearly approach the average intraperitoneal temperature value. For normal values see Tables 1 to 4.

TABLE 1—GUINEA PIGS
Normal External Surface Temperatures

	Rectum	Between the hind legs	Between the front legs	Center midline of abdomen	Center of upper side
Animal No. 1	39.6	39.0	38.7	38.5	38.8
Animal No. 2	38.1	37.6	37.7	36.9	37.5
Animal No. 3	37.8	38.1	38.2	36.7	37.9
Animal No. 4	38.1	38.3	38.5	38.2	38.4
Animal No. 5	38.0	38.2	38.8	38.2	38.8
Animal No. 6	34.9	36.1	37.2	36.2	37.1
Animal No. 7	39.0	37.1	38.3	37.5	38.5

Animal No. 8	35.3	38.0	38.1	37.8	38.0
Animal No. 9	36.2	39.2	39.1	38.7	39.0
Animal No. 10	35.6	38.5	38.7	39.4	38.5
Animal No. 11	36.3	36.2	36.8	36.4	36.5
Animal No. 12	36.7	36.7	37.4	37.2	36.7
Average	37.1	37.7	38.1	37.6	38.0

TABLE 2—GUINEA PIGS

Normal Intra-peritoneal Temperatures

	Be- neath upper par- ietes	Center mass of intes- tines	Be- neath the dia- phragm	Just in- side incis- ion	Above lower parietes
Animal No. 1	39.6	38.9	38.8	38.9	38.2
Animal No. 2	38.1	37.5	37.8	37.3	37.6
Animal No. 3	37.8	38.1	38.1	37.9	38.2
Animal No. 4	38.1	39.6	39.5	39.4	39.1
Animal No. 5	37.9	38.4	38.3	38.2	38.4
Animal No. 6	34.9	37.0	36.9	36.8	37.1
Animal No. 7	39.0	39.0	39.9	38.9	40.1
Animal No. 8	35.3	37.4	37.9	37.1	38.0
Animal No. 9	34.6	37.0	37.2	36.5	37.4
Animal No. 10	33.9	39.6	38.7	38.4	38.8
Animal No. 11	35.0	37.9	37.8	37.6	37.8
Animal No. 12	37.5	38.6	38.7	38.4	38.8
Average	36.8	38.0	38.1	37.7	38.1

TABLE 3—RABBITS

Normal External Surface Temperatures

	Rectum	Between the hind legs	Between the front legs	Center of midline of abdomen	Center of upper side
Animal No. 1	39.1	38.6	38.0	37.4	37.9
Animal No. 2	37.9	39.7	40.2	39.9	39.8
Animal No. 3	38.5	39.7	39.5	39.4	39.6
Animal No. 4	37.6	39.7	39.4	39.5	40.0
Animal No. 5	37.8	37.8	40.4	40.0	40.3
Animal No. 6	37.6	39.2	38.9	38.7	39.0
Average	38.1	39.6	39.3	39.1	39.5

TABLE 4—RABBITS

Normal Intra-peritoneal Temperatures

	Be- neath upper par- ietes	Center mass of intes- tines	Be- neath the dia- phragm	Just in- side peri- toneal cavity	Above lower parietes
Animal No. 2	37.8	38.5	39.0	38.8	38.9
Animal No. 3	38.5	40.0	38.8	38.7	39.8
Animal No. 1	38.5	39.1	40.3	39.3	39.4
Animal No. 4	39.1	40.0	39.9	39.9	40.0
Animal No. 5	37.5	37.9	37.4	38.8	39.4
Animal No. 6	39.2	39.1	39.2	39.1	37.3
Average	38.4	39.1	39.1	39.1	39.4

EXPERIMENT TWO—EFFECT OF COLD

In studying the effects of cold the animal lay on its left side and the use of icebags was employed. These were supported upon each side, and allowed to rest upon the upper (right) side of the animal. In the case of the guinea pigs covers were used upon the bags in the same manner that they are upon patients. The rabbits had long fur and the covers of the ice bags were removed during the experiments.

TABLE 5—GUINEA PIGS

The Effect of Cold Applied to the Abdominal Wall Upon the Temperature in Various Parts of the Intra-peritoneal Cavity

	Rectum	Beneath upper parietes	Beneath the diaphragm	Center of mass of intestines	Above lower parietes	Pelvis	Just inside incision
Animal No. 1							
Before	37.7	37.1	37.2	37.4	36.2	36.9	36.7
34 min. After	33.0	23.6	30.8	31.3	32.4	30.3	31.8
Decrease	4.7	13.5	6.5	6.1	3.7	6.6	4.9
Animal No. 2*	37.9	38.4	38.4	38.3	37.7	38.2	37.5
18 min.	33.9	29.4	34.2	34.3	35.6	33.9	34.3
	4.0	9.0	4.2	4.0	2.1	4.4	3.1
Animal No. 3	34.9	37.0	37.1	36.9	36.1	36.8	36.8
45 min.	30.2	24.5	30.9	30.7	32.6	30.5	32.5
	4.7	12.5	6.2	6.2	3.5	6.3	4.1
Animal No. 4	34.0	35.5	35.2	35.4	34.5	35.3	35.1
75 min.	33.5	31.7	33.5	33.6	33.8	33.4	33.8
	0.5	3.8	1.7	1.8	0.7	1.9	1.3
Animal No. 5	39.6	38.9	38.2	38.8	38.1	38.9	38.4
48 min.	34.4	27.0	33.0	33.7	35.0	33.5	34.5
	5.2	11.9	5.2	5.1	3.1	5.4	8.9
Animal No. 6	38.1	37.5	37.6	37.8	37.4	37.3	37.1
43 min.	33.8	27.7	34.9	33.1	34.6	36.4	34.0
	4.3	9.8	3.7	4.7	2.8	4.9	3.1
Animal No. 7*	37.8	38.1	38.2	38.1	38.1	37.9	37.8
25 min.	34.1	30.3	34.6	34.5	36.0	33.9	35.1
	3.7	7.8	3.6	3.6	2.1	4.0	2.7
Animal No. 8	38.1	39.6	39.1	39.5	39.8	39.4	38.7
54 min.	31.6	25.4	32.3	32.8	35.8	32.5	33.8
	6.5	14.2	6.8	6.7	4.0	6.9	4.9
Animal No. 9	34.9	37.0	37.1	36.9	37.1	36.8	36.8
49 min.	29.9	24.2	31.4	31.2	34.0	31.0	32.8
	5.0	12.8	5.7	5.7	3.1	5.8	4.0
Animal No. 10	39.0	39.0	40.1	39.9	39.2	38.9	38.3
67 min.	34.1	25.7	34.1	33.9	36.9	32.8	33.8
	4.9	13.3	6.0	6.0	3.3	6.1	4.5
Animal No. 11	35.3	37.4	38.0	38.0	37.0	37.1	36.8
36 min.	31.1	27.6	33.5	33.5	34.1	32.6	33.3
	4.2	9.8	4.5	4.5	2.9	4.5	3.5
Animal No. 12	34.6	37.0	37.4	37.2	36.4	36.5	36.8
46 min.	29.6	25.7	31.6	31.5	33.5	30.6	33.1
	5.0	11.3	5.8	5.7	2.9	5.9	3.7
Average decrease	4.7	11.3	5.1	5.2	3.0	5.4	3.8

*Not averaged in.

TABLE 6—RABBITS

The Effect of Cold Applied to the Abdominal Wall Upon the Temperature in Various Parts of the Intra-peritoneal Cavity

	Rectum	Beneath upper parietes	Beneath the diaphragm	Center of mass of intestines	Above lower parietes	Pelvis	Just inside peritoneal cavity
Animal No. 1							
Before	36.5	37.9	38.3	37.8	37.8	37.8	38.1
48 min. After	33.0	30.4	34.4	34.0	35.8	33.9	34.2
Decrease	3.5	7.5	3.9	3.8	2.0	3.9	3.9
Animal No. 2*	38.8	38.9	39.1	38.9	38.7	39.1	38.4
13 min.	37.6	35.8	37.7	37.3	37.7	37.4	37.2
	1.2	3.1	1.4	1.6	1.0	1.7	1.2

Animal No. 3	38.5	39.1	39.4	40.3	39.4	39.3	39.1
46 min.	34.3	32.2	35.5	36.4	35.9	35.4	35.4
	4.2	6.9	3.9	3.9	3.5	3.9	3.7
Animal No. 4	37.8	38.5	38.9	39.0	39.1	38.8	39.1
45 min.	33.1	30.4	34.8	35.0	36.7	34.7	35.7
	4.7	8.1	4.1	4.0	2.4	4.1	3.4
Animal No. 5	38.5	40.0	39.8	38.8	39.6	38.7	39.1
34 min.	35.1	33.6	36.8	35.9	38.0	35.7	37.2
	3.4	6.4	3.0	2.9	1.6	3.0	1.9
Animal No. 6	39.1	40.0	40.0	39.9	39.7	39.9	39.2
51 min.	35.5	32.3	36.4	36.5	36.9	36.3	36.5
	3.6	7.7	3.6	3.4	2.8	3.6	2.7
Average	3.9	7.3	3.7	3.6	2.5	3.7	3.2

*Not averaged in.

When the ice bag was applied for thirty minutes or longer the above results were obtained. The decrease in intraperitoneal temperature was greatest just beneath the upper parietes; it was least just above the lower parietes; and was intermediate in the mass of intestines in the center. Likewise the falls of temperature in the pelvis and against the diaphragm were less than that against the upper parietes.

TABLE 7

Time as a Factor in the Decrease in the Intraperitoneal Temperature												
Minutes, total decrease during												
	1	2	3	5	10	15	20	25	30	45	60	75
Guinea pig												
No. 1.	0.2	0.6	1.0	1.4	5.2	7.8	9.0	10.5	13.0	13.4		
Guinea pig												
No. 2.	0.4	1.8	3.0	3.6	7.0	8.0	9.0					
Guinea pig												
No. 3.	0.0	0.0	0.2	0.2	0.3	0.5	0.9	2.8	3.3	11.7	12.6	
Guinea pig												
No. 4.	1.2	1.8	2.6	3.4								
Same animal												
at a differ-												
ent time	0.1	0.1	0.2	0.5	0.5	1.2	1.9	2.1	2.3	2.9	3.5	3.9
Rabbit												
No. 1.	0.2	0.3	0.7	1.3	2.8	3.4	4.3	5.1	6.0	7.0	7.5	
Rabbit												
No. 2.	0.2	0.5	0.8	1.1	2.0	2.2						

Table 7 illustrates that the greatest decrease per unit of time of the intraperitoneal temperature occurs during the period between ten and forty-five minutes after the application of the cold.

TABLE 8—GUINEA PIGS

Effects of Shivering and Convulsions Upon Intraperitoneal Temperature										
Minutes, total change after cold applied										
	0	2	5	10	15	20*	25	30	34†	
Guinea pig										
No. 1.	37.1	36.5	35.6	31.9	29.4	28.1	26.6	24.0	23.6	
	35	36	38	39	40	44				
	24.3	24.9	25.3	25.5	25.6	26.2				
*Shivering began.										
†Convulsions began; shivering continued.										
Temperature decreased 13.5 degrees in 34 min.										
Temperature then increased 2.6 degrees in 10 min.										
Guinea pig	0	2	5*	0†	5	11	15	21		
No. 2	39.4	37.6	36.0	35.5	35.5	35.1	34.4	33.6		

25	31	35	40	45	60	75
33.4	33.2	33.1	33.0	32.6	32.0	31.7

*Shivering severely—ice removed—temperature had dropped 3.4 degrees in 5 min.
†Ice reapplied. Shivered severely—decrease now of 3.9 degrees in 75 min.

Shivering and (in one case) convulsions acted to prevent a rapid decrease, or to actually increase, the temperature. In one animal (guinea pig) in five minutes cold decreased the intraperitoneal temperature 3.4 C. (39.4 C. to 36.0 C.). Shivering then became constant and pronounced, and during a later period of seventy five minutes the temperature decreased 3.8 C. further (from 35.5 C. to 31.7 C.). In another animal in 34 minutes cold reduced the temperature 13.4 C. (37.0 C. to 23.6 C.); convulsions set in and in seven minutes the temperature had risen 2.6 C. (to 26.2 C.). See Table 8.

TABLE 9
Intraperitoneal Temperature Changes After Removal of External Cold

	Temp. before cold applied	Cold applied (minutes)	Degrees of decrease	Lowest temp. value	Interval at room temp. (minutes)	Degrees of increase in temp.	Resulting temperature
Guinea pig No. 1.....	38.4	18	9.0	29.4	92	5.9	35.3
Guinea pig No. 2.....	35.5	105	3.8	31.7*	47	3.6	35.3
Rabbit No. 1.....	37.9	48	7.5	30.4	48	3.7	34.1

*Guinea pig was shivering most of time.

After removal of the ice bag the intraperitoneal temperature rose and gradually approached the normal. If the animal shivered the rise was much more rapid, and the normal temperature was more nearly approached. In one animal in eighteen minutes there was a temperature decrease of 9.0 C. (38.4 C. to 29.4 C.); in ninety-two minutes after removal of the cold the temperature rose 5.9 C. (29.4 C. to 35.3 C.). See Table 9.

EXPERIMENT THREE—EFFECT OF HEAT

A. Application of Local Heat.

In studying the effects of local heat the animal lay in the same position (i. e., on its left side), and hot water bags were employed. These applied temperatures did not exceed 50 degrees Centigrade.

TABLE 10—GUINEA PIGS.

The Effect of Heat Applied to the Abdominal Wall Upon the Temperature Values in the Intraperitoneal Cavity

	Rectum	Beneath upper parietes	Beneath diaphragm	Center of mass of intestines	Above lower parietes	Pelvis	Just inside peritoneal cavity
No. 1* After.	38.2	43.3	39.5	39.9	39.0	39.3	38.6
26 min.							
before	38.1	39.6	39.1	39.5	38.9	39.4	38.7
Increase ...	0.1	3.7	0.4	0.4	0.1	—0.1	—0.1
No. 2	40.9	44.1	40.7	42.1	38.5	38.8	38.3
50 min. ...	39.0	39.0	40.1	39.9	39.2	39.7	38.3
	1.9	5.1	0.6	2.2	—0.7	—0.9	0.0
No. 3	34.1	38.3	37.2	38.2	36.7	35.9	36.4
40 min. ...	33.9	34.6	36.5	36.6	35.2	35.8	36.3
	0.2	3.7	0.7	1.6	1.5	0.1	0.1

No. 4	35.9	42.1	38.7	39.6	38.6	37.5	37.6
46 min. ...	35.0	37.9	37.8	37.8	37.2	37.6	37.5
	0.9	4.2	0.9	1.8	1.4	-0.1	0.1
No. 5	37.6	42.0	39.1	39.6	39.4	38.3	38.1
37 min. ...	37.5	38.6	38.8	38.7	38.9	38.4	38.2
	0.1	3.4	0.3	0.9	0.5	-0.1	-0.1
No. 6	39.9	44.4	40.1	41.6	41.7	39.1	39.1
52 min. ...	38.0	39.3	39.4	39.3	39.1	39.2	39.1
	1.9	5.1	0.7	2.3	2.6	-0.1	0.0
No. 7	39.2	45.1	40.0	41.8	41.8	38.9	38.8
56 min. ...	37.6	39.0	39.2	39.1	38.8	38.8	38.7
	1.6	6.1	0.8	2.7	3.0	0.1	0.1
No. 8	38.0	42.9	37.8	38.8	38.6	36.7	36.7
42 min ...	35.9	36.7	36.8	36.7	36.5	36.5	36.5
	2.1	6.2	1.0	2.1	2.1	0.2	0.2
No. 9	38.5	43.7	38.4	39.6	39.7	37.6	37.5
50 min. ...	36.1	37.4	37.4	37.4	37.3	37.3	37.3
	2.4	6.3	1.0	2.2	2.4	0.3	0.2
No. 10	38.1	43.5	38.9	39.7	39.5	38.4	38.2
39 min. ...	37.2	38.5	38.6	38.6	38.3	38.3	38.1
	0.9	5.0	0.3	1.1	1.2	0.1	0.1
No. 11	37.7	41.8	37.9	38.5	38.4	37.2	37.1
40 min. ...	36.8	37.3	37.5	37.5	37.1	37.3	37.2
	0.9	4.5	0.4	1.0	1.3	-0.1	-0.1
No. 12	37.8	41.9	39.3	39.6	39.7	36.6	36.9
35 min. ...	37.6	38.8	39.0	38.9	38.6	36.7	36.7
	0.2	3.1	0.3	0.7	1.1	-0.1	0.2
Average	1.2	4.8	0.6	1.7	1.5	-0.05	0.1

*Not included in average.

TABLE 11—RABBITS

The Effect of Heat Applied to the Abdominal Wall Upon the Temperature Values in the Intraperitoneal Cavity

	Rectum	Beneath up- per parietes	Beneath diaphragm	Center of mass of intestines	Above lower parietes	Pelvis	Just inside per- itoneal cavity
No. 1.* After 27 min.	36.2	43.2	37.0	38.3	36.2	36.4	35.9
before	35.9	35.8†	36.0	35.8	35.8	35.8	34.5
Increase ...	0.3	7.4	1.0	2.5	0.4	0.6	1.4
No. 2	36.0	41.0	35.2	37.1	36.9	37.2	37.1
65 min. ...	33.1	33.7†	34.1	34.1	33.5	34.0	33.6
	2.9	7.3	1.1	3.0	3.4	3.2	3.5
No. 3	39.8	45.0	40.1	41.2	39.9	40.1	38.7
35 min. ...	39.2	39.1	39.1	39.1	39.1	39.2	37.3
	0.6	5.9	1.0	2.1	0.8	0.9	1.4
No. 4	39.8	44.6	39.8	40.7	40.6	40.8	40.3
48 min. ...	37.7	38.4	38.6	38.4	38.4	38.5	38.0
	2.1	6.2	1.2	2.3	2.2	2.3	2.3
No. 5	40.1	43.7	39.4	40.5	40.6	40.9	40.5
45 min. ...	37.0	37.9	38.1	37.9	37.9	38.0	37.7
	3.1	5.8	1.3	2.6	2.7	2.9	2.8
No. 6	40.2	44.8	41.1	40.9	41.1	41.3	40.3
48 min. ...	38.1	39.3	39.5	39.2	39.2	39.3	38.1
	2.1	5.5	1.6	1.7	1.9	2.0	2.2
Average increase....	2.1	6.0	1.0	2.3	2.2	2.3	2.5

*Not included in average.

†Previously reduced by cold.

When heat was applied locally to the external abdominal wall by far the greatest rise in temperature occurred in the area just beneath the area of application of the heat. A very definite increase was also observed in the center of the mass of intestines and in the pelvis. These increases were proportionately greater in the rabbits than in the guinea pigs. (Table 10 and Table 11.)

TABLE 12.

Time as a Factor in the Increase in Intraperitoneal
Temperatures as a Result of Hot Water Bottles
Applied to the Abdominal Wall*

		Total Increase in Minutes													
		1	2	3	9	11	15	20	25						
Guinea pig	No. 1	0	0.2	0.2	0.2	1.0	1.4	3.3	3.6						
		1	2	4	6	10	16	20	25	30					
Guinea pig	No. 2	0	0.1	0.4	0.7	0.8	1.2	2.1	3.9	5.0					
		1	2	3	5	11	15	20	27						
Rabbit	No. 1...	1.5	2.3	2.9	3.9	5.7	6.4	7.0	7.4						
		1	2	3	7	12	15	20	25	30	45	60	65		
Rabbit	No. 2...	0.8	1.4	1.8	2.8	3.2	3.7	4.2	4.2	4.2	6.5	7.1	7.2		

*Beneath upper parietes.

*Beneath upper parietes.

When a hot water bottle was applied to the external parietes as hot as possible without causing distress (distress occurred at a temperature between fifty degrees Centigrade and fifty-two degrees Centigrade) it was usually found that the subjacent intraperitoneal temperature did not undergo change as quickly as when cold was applied. Fifteen or even twenty minutes were usually required to produce an appreciable change. The continued application of heat after thirty to forty-five minutes caused a more gradual increase in the subjacent temperature than had occurred during the previous period. See Table 12.

TABLE 13.

*Intraperitoneal Temperature Changes After Removal
of External Heat*

	Temp. before heat applied	Heat applied (minutes)	Degrees incr. in temp.	Highest eleva- tion of temp.	Interval at room temp.	Degrees decr. in temp.	Resulting temp.	Total time interval	Total decrease	Resulting temp.
Guinea pig										
No. 1...	39.6	25	3.7	43.3	20	4.2	39.1	120	6.7	36.6
Guinea pig										
No. 2...	39.9	30	5.1	44.1	8	3.8	40.3	14	5.7	38.4
Rabbit										
No. 1...	35.8	27	7.4	43.2	27	6.9	36.3	122	10.4	32.8
Rabbit										
No. 2...	33.7	65	7.3	41.0	19	3.5	37.5	115	8.7	32.3

When the external heat was removed the intraperitoneal temperature fell rapidly, especially at first. After the temperature approached normal, which ordinarily occurred in less time than the elevation had required, the rate of temperature decrease became less; and without fail the temperature became even lower than it originally had been. For instance, one animal (guinea pig) had an original temperature of 39.0; heat was applied for thirty minutes with an increase of 5.1 C. (to 44.1 C.); in eight minutes at room temperature (28.0 C.) the temperature decreased 3.8 C. (to 40.3 C.); in six additional minutes it made a further decline of but 1.9 C. (to 38.4 C.) (Table 13.)

junction with diathermy. Although Sampson¹ says, "Twenty-five or thirty minutes (is) the average time for diathermy treatment," these tests were all run from forty-five minutes to several hours since the average abdominal operation requires more than thirty minutes' time. The electrodes were at times applied on opposite sides of the body at the level of the liver and diaphragm; in some instances, especially with the thermometer in the rectum, they were of the cuff variety and were applied to the hind legs. When the animals were under the influence of but small doses of sodium amythal they objected immediately and vigorously if the current was turned on strong enough to cause a burn. Abnormally rapid and deep respirations prevented marked elevations in temperature unless large doses of sodium amythal were used. The higher readings herein presented were obtained by this means.

1. C. M. Sampson; Practice of Physiotherapy; C. V. Mosby Co., St. Louis, Mo.; 1926, p. 123.

rise in subdiaphragmatic temperature; but in which after ten minutes the rectal temperature began to decline and this decline persisted to below the normal. The normal temperature was 35.0 C. In ten minutes the rectal temperature was 35.7 C. It then began to fall and in fifteen more minutes was 35.0 C. In five minutes more it sank to 34.3 C., and then rose to 34.8 C. where it persisted for ten minutes despite a steady rise in subdiaphragmatic temperature.

With the electrodes applied to the hind legs the temperature in the pelvis soon became slightly greater than that in the rectum, with the temperature in the subdiaphragmatic area markedly less. This was not always the case, as sometimes the rectal temperature was lower than the other two. But because of the decidedly lower normal rectal temperature the increase in degrees averaged more in the rectum. The temperature in the subdiaphragmatic area rose comparatively slowly. (Table 18.)

TABLE 18.
Changes Produced in the Intraperitoneal Temperatures by Diathermy, with the Electrodes Applied About the Hind Legs
Time in Minutes

	0	2	6	10	15	20	23	28	33	38	43	45
Guinea pig No. 1—Rectum.....	34.3	34.4	34.7	34.9	35.3	36.2	37.2	38.3	40.5	41.8	43.9	45.0
Subdiaphragm	37.8	37.8	37.7	37.8	38.1	38.4	38.7	38.9	39.2	39.3	39.3	39.3
Pelvis	37.8	37.8	38.0	38.7	39.1	39.8	40.6	41.3	42.4	43.3	44.0	44.5
	0	2	4	9	15	21	25	30	36	40	45	96
Rabbit No. 1—Rectum.....	37.7	37.7	37.7	37.8	37.9	37.9	37.9	38.2	38.5	38.5	38.9	39.4
Subdiaphragm	38.8	38.8	38.8	38.9	39.0	39.1	39.1	39.2	39.3	39.4	39.5	39.8
Pelvis	38.9	38.9	38.9	38.9	39.0	39.1	39.1	39.1	39.2	39.3	39.4	40.1

TABLE 19.
Time as a Factor in the Increase in Intraperitoneal Temperatures from Diathermy

Total Temperature Increase Shown by Minutes				Temp.	3	5	8	13	20	25	30	35	40	45
Guinea pig No. 1.* Rectum.....	35.0	0.0	0.3	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subdiaphragm	37.8	0.9	1.3	2.8	3.4	3.9	4.3	4.7	5.2	5.7	7.0			
Pelvis	37.6	0.1	0.1	0.1	0.4	0.7	0.8	0.9	1.4	1.4	1.8			
	2	5	8	13	20	25	30	35	40	45	52	57	62	
Guinea pig No. 2.†—Rectum.....	34.3	0.1	0.4	0.6	1.0	1.8	2.9	4.0	6.2	7.5	9.6	10.7		
Subdiaphragm	37.8	0.0	0.0	0.0	0.3	0.5	0.9	1.1	1.4	1.5	1.5	1.5		
Pelvis	37.8	0.0	0.2	0.9	1.3	2.0	2.8	3.5	4.6	5.5	6.2	6.7		
	2	5	10	15	20	25	30	35	40	45	52	57	62	
Rabbit No. 1.* Rectum.....	40.3	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9
Subdiaphragm	40.6	0.0	0.0	..	0.1	0.2	0.4	0.4	0.6	0.7	1.0	1.3	1.5	1.7
Pelvis	40.5	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.5	0.6	0.9	1.1	1.3	1.4
	3	6	11	16	20	23	28	33	40	44	48			
Rabbit No. 2.*—Rectum	38.3	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Subdiaphragm	40.5	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Pelvis	40.3	0.1	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	3	4	9	15	20	25	30	36	40	45	61	76	90	96
Rabbit No. 3.†—Rectum.....	37.7	..	0.0	0.1	0.2	0.2	0.2	0.5	0.8	0.8	1.8	1.4	1.6	1.7
Subdiaphragm	38.8	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.5	0.6	1.0	1.7	1.4	1.4
Pelvis	38.9	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.9	1.1	1.2	1.2

*Electrodes about liver.
†Electrodes about hind legs.

With the electrodes applied in the region of the liver and diaphragm by far the greatest increase in temperature was in the subdiaphragmatic area. (Table 17.) Table 17 also shows the rectal temperature of one animal (guinea pig) which had from the first a marked

The continued application of diathermy with a fairly large current produced a gradual rise in intraperitoneal temperature. In other regions the rise was not as great; or there was a slightly decrease in the regions through which the current did not pass. If the current was

low or moderate the body dissipated the heat and the highest temperature change was not marked. Especially is this true in the rabbit, and unless heavily narcotized and covered with a towel its respirations were sufficiently frequent and deep to prevent a very rapid or extensive rise in temperature. And this despite the fact that the animal may be so heavily narcotized as to be immune to pain. The rise in temperature from diathermy required more time to appear than that induced by a hot water bottle. (Compare Table 12 and Table 19.) Twenty to thirty minutes were usually required to produce an appreciable change with the diathermy. (Table 19.) The time required to warm up the saline moistened compresses undoubtedly accounts for part of the delay. Unless the rabbit was very heavily narcotized and covered with a towel the rise in temperature was very slight ranging from 0.1 C. to 1.8 C. in forty-five minutes. In some instances, however, with the electrodes applied about the diaphragmatic area the rectal temperature during the same period of time sank below the original temperature. (Table 1C.)

Removal of the diathermy electrodes from about the liver was followed by a prompt and definite decrease in the temperature beneath the diaphragm, and by a small but constant and definite increase in the temperature of both rectum and pelvis. (Table 20.) The discontinuance of the diathermy current applied to the hind legs caused a constant increase in the rectal and pelvic temperatures, and a smaller increase in the subdiaphragmatic temperature at times. (Table 21.) The above phenomenon is undoubtedly due, in whole or in part, to a redistribution of the blood of the body from the areas in the diaphragmatic field. With the discontinuance of the diathermy the current of blood which has been flowing rapidly through this region is free to return to other areas, presumably less hyperemic, and the increase in temperature results. That the skin, muscle, and solid viscera are especially concerned in the changes during diathermy application we can understand from the following statement by Sampson,² "The heat found in a given part from the passage of a given amount of current though it varies as its

TABLE 20.
*Changes Occurring in Intraperitoneal Temperatures When
Diathermy Electrodes Are Removed from About
the Diaphragmatic Region*

	Normal Temp.	Diathermy ap- plied (min.)	Deg. increase	Resulting Temp.	Minutes After Diathermy Off													Elevation
					1	2	3	5	7	9	10	12	15	20	25			
Guinea pig No. 1—																		
Rectum	35.0	45	0.2	34.8	34.8	34.8	34.8	34.8	34.9	34.8	34.9	34.9	34.9	35.1	35.1		0.3	
Subdiaph.	37.8	45	7.0	44.8	44.5	44.3	44.0	43.5	43.2	42.5	42.3	41.7	41.2	40.5	40.1		0.0	
Pelvis	37.6	45	1.8	39.4	39.5	39.5	39.5	39.5	39.7	39.7	39.8	39.7	39.7	39.6	39.5		0.4	
					1	2	3	5	7	9	11	12	16	20	24	28	72	Elevation
Rabbit No. 1—																		
Rectum	40.3	62	0.9	41.2	41.2	41.2	41.2	41.3	41.3	41.3	41.3	41.3	41.4	41.4	41.5	41.5	41.8	0.6
Subdiaph.	40.6	62	1.7	42.2	42.3	42.3	42.3	42.4	42.5	42.5	42.5	42.6	42.7	42.7	42.7	42.8	42.0	0.5
Pelvis	40.5	62	1.4	41.9	41.9	41.9	41.9	42.0	42.0	42.0	42.0	42.0	42.2	42.2	42.4	42.4	42.6	0.7
					1	2	4	6	7	9	10	12	15	20	25	29	Elevation	
Rabbit No. 2—																		
Rectum	38.3	48	0.1	38.4	38.4	38.4	38.4	38.4	38.5	39.5	38.5	38.6	38.6	38.7	38.7		0.3	
Subdiaph.	40.5	48	0.3	40.8	40.8	40.9	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	0.1
Pelvis	40.3	48	0.5	40.8	40.8	40.9	40.9	40.9	40.8	40.8	40.8	40.9	40.9	40.9	40.9	40.9	40.9	0.1

TABLE 21
*Changes Occurring in Intraperitoneal Temperatures When Dia-
thermy Electrodes Are Removed from the Hind Legs*

Guinea pig No. 1—	Normal Temp.	Diathermy ap- plied (min.)	Deg. increase	Resulting Temp.	Minutes After Diathermy Off													
					1	2	3	5	7									
Rectum	34.3	45	10.7	45.0	45.2	45.3	45.4	45.0	44.6									
Subdiaph. . .	37.8	45	1.5	39.3	39.3	39.3	39.3	39.3	39.3									
Pelvis	37.8	45	6.7	44.5	44.7	44.7	44.7	44.6	44.6									
Rabbit No. 1—				1	2	3	4	6	10	15	19	23	28	33	37	Elevation		
Rectum	37.7	96	1.7	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.2	38.5	38.5	38.2	38.1	0.0		
Subdiaph. . .	38.8	96	1.4	40.2	40.3	40.3	40.3	40.4	40.4	40.5	40.5	40.6	40.6	40.6	40.7	0.7		
Pelvis	38.9	96	1.2	40.1	40.1	40.2	40.2	40.3	40.4	40.4	40.5	40.5	40.6	40.6	40.7	0.7		

resistance, that is . . . through tissues of varying degrees of resistance, then the more resistant tissues will generate the most heat."

2. C. M. Sampson; Practice of Physiotherapy, p. 140.

Viscera were brought outside the peritoneal cavity through a midline abdominal incision. Viscera exposed on the outside of the abdominal cavity showed a definite decrease in temperature in a limited time compared to a very nominal decrease in temperature in a limited time just inside the peritoneal cavity. If only small masses of intestine were brought out the temperature in the external mass would decrease five to eight degrees in thirty minutes. This may be par-

tially due to a constriction of the circulation following evisceration through a small incision. If larger masses were exposed the temperature of the external mass approached very nearly (in time equalled) the temperature of the inside of the peritoneal cavity. This decline of the internal temperature was about 2.0 C. below the beginning temperature in one to one and one-half hours. If further exposure continued over a prolonged period there was a gradual decline in both visceral temperatures; in which the decline of the external temperature became the faster. (Table 22.)

When abdominal viscera had been exposed for considerable periods of time decreases in the temperatures of the exposed viscera and of various intraperitoneal

EXPERIMENT FOUR-EXPOSURES OF
VISCERA
TABLE 22.

Comparison of the Temperature of the Intestines Remaining Just Inside the Peritoneal Cavity and Those Brought Outside the Peritoneal Cavity and Exposed.
Time in Minutes.

		0	2	5	12	15	20	25	28	60	202	
Guinea pig No. 1—Inside.....		35.7	35.4	35.2	35.1	35.2	35.3	35.7	35.8	35.6	35.0	
Outside		35.7	29.6	28.7	28.1	28.0	28.2	28.4	28.5	29.5	31.5	
		0	2	5	10	15	19	25	30	41	45	74
Guinea pig No. 2—Inside.....		36.8	36.8	36.7	36.7	36.8	36.8	36.8	36.8	*	36.3	35.0
Outside		36.8	31.8	31.3	31.0	30.9	30.9	31.0	31.7	*	35.6	35.0
*More intestines out.												
						0	2	5	7	15	22	
Guinea pig No. 3—Inside.....						37.5	37.3	37.2	37.2	36.8	36.6	
Outside						35.4	34.9	34.6	34.5	33.9	33.2	
			0	2	5	10	15	20	25	30	53	
Guinea pig No. 4—Inside.....			38.8	37.4	37.2	37.2	37.3	37.5	37.7	37.5	37.3	
Outside			38.8	35.8	34.0	32.2	31.5	31.0	30.5	30.8	31.0	
						0			148		303	
Rabbit No. 1—Inside.....						37.8			33.4		30.4	
Outside						37.8			28.1		26.4	
			0	3		30		60		90	125	
Rabbit No. 2—Inside.....			40.0	40.1		40.1		40.0		40.0	39.8	
Outside			38.8	38.9		38.2		28.0		27.9	27.1	

TABLE 23.
Comparison of the Temperature of Various Intraperitoneal Regions After Exposure of Abdominal Viscera Outside the Peritoneal Cavity

	Rectum	Above lower epiparietes	Beneath up- per parietes	Center of mass of intestines	Pelvis	Beneath the diaphragm	Just inside peri- toneal cavity	Mass of ex- posed viscera	Surface of ex- posed viscera	Air
Guinea pig No. 1.....	36.1	37.1	37.4	37.9	37.1	38.0	36.8	31.8	28.9	27.4
86 minutes after	33.9	36.6	37.0	36.6	36.5	36.3	36.3	34.8	32.2	32.2
Decrease	2.2	0.6	0.4	1.3	0.6	1.7	0.5	-3.0	-3.3	...
Guinea pig No. 2.....	34.2	36.9	37.4	37.0	37.3	37.3	36.8	31.4	26.9	25.4
568 minutes after	32.9	34.9	35.1	34.7	34.9	34.5	34.5	33.1	27.3	25.6
Decrease	1.3	2.0	2.3	2.3	2.4	2.8	2.3	-1.7	-0.4	...
Rabbit No. 1.....	38.9	39.6	40.0	39.9	39.9	39.8	39.5	39.3	31.8	28.8
81 minutes after	38.8	39.1	39.6	38.8	39.4	38.9	38.2	38.1	33.9	29.8
Decrease	0.1	0.5	0.4	1.1	0.5	0.9	1.3	1.2	-2.1	...
Rabbit No. 2.....	37.8	38.9	39.1	39.1	39.1	39.1	37.8	33.0	29.7	28.6
317 minutes after.....	30.9	32.3	32.8	33.8	32.2	31.0	30.6	26.4	25.1	24.4
Decrease	6.9	6.6	6.3	5.3	6.9	8.1	7.2	6.6	4.6	...

TABLE 24.

The Temperature Changes Occurring with Careful Handling of the Viscera Remaining Within the Abdominal Cavity

							Time in Minutes						
	0	2	5	9	15	20	25	30	35	45	60	90	130
Guinea pig No. 1.....	36.6	36.4	36.4	36.6	36.6	36.6	36.6	36.6	36.6	36.5	36.4	36.3	36.2
Guinea pig No. 2.....	37.9	37.3	37.0	37.1	37.2	37.2	37.0	36.5	36.6				
Guinea pig No. 3.....	39.0	38.4	38.0	38.0	37.9	37.8	37.7	37.7	37.6				
Guinea pig No. 4.....	39.0	38.7	38.6	38.5	38.5	38.4	38.0	37.8	37.7				
Rabbit No. 1.....	37.5	37.5—	37.5—	37.5	37.5—	37.4	37.4	37.4	37.4—	37.3	37.2—	37.0	
Rabbit No. 2.....	39.1	38.9.	38.9										
Rabbit No. 3.....	39.6	39.4	39.1	39.2	39.2								
Rabbit No. 4.....	39.0	38.7	38.9	39.0	39.1	39.3							
Rabbit No. 5.....	39.8	39.8	39.8	39.9	39.9	40.0	40.0						
					15	20	25						

regions occurred. These varied fairly constantly according to the position. The least change usually occurred beneath the upper parietes, usually less than 0.1 C. in an hour or more of exposure. The change above the lower parietes was about the same, the amount of change being influenced somewhat by the temperature of the table upon which the animal was placed. The change just inside the abdominal incision was also small, with the temperature values both before and after the exposure lower than those for the rest of the intraperitoneal cavity. The change in the pelvis was usually slightly greater than that beneath the upper parietes. The amount of change in the rectal temperature was the most variable, and depended largely upon the difference between the rectal and the general body cavity temperature values which were present at the beginning. The greatest decrease in temperature was usually beneath the diaphragm. The change in the mass of intestines remaining in the abdomen was next greatest. The exposed viscera usually had a later elevation in temperature unless very unfavorable conditions intervened, such as interferences with the circulation, or undue duration of exposures. (Table 23.)

When the different viscera were still retained within the abdominal cavity and were handled carefully a change in temperature was absent or not very marked. A decrease of one or two degrees Centigrade in thirty minutes was usually noted.

TABLE 25.

Temperature Changes Occurring with Handling and with No Handling of the Exposed Viscera

	Time in Minutes				
	0	5	12	15	18
Guinea pig No. 1—					
Not handled	28.1	27.8	27.9	28.2	28.5
Handled*	32.5	32.4	32.1	32.9	33.0
Guinea pig No. 2—					
Not handled	31.0	31.2	30.9	31.0	†31.2
	30	43	59	75	
	35.6	35.4	35.0	34.8	

	0	7	22	
Guinea pig No. 3—				
Handled	35.4	34.5	33.2	
Rabbit No. 1—				
Not handled	37.8	37.5	37.3	37.1
Handled	37.1	35.1	37.2	37.3

*Previously warmed by towels.

†Abdomen still further opened.

Handling, gently or roughly, of the exposed viscera for some time caused an immediate drop in temperature of 0.4 C. to 3.0 C., followed by a rise to a temperature from 0.1 C. to 2.0 C. higher than before the handling. The decrease was undoubtedly due to more rapid evaporation with more exposure to the atmosphere. The succeeding increase was very likely due to an increased blood supply stimulated by the trauma. (Table 25.)

TABLE 26.

Comparison of the Temperatures of the Exposed Intestine and Its Exposed Mesentery

	Time in Minutes				
	0	5	21	87	95
Guinea pig No. 1—					
Surface of intestine.....	30.5	31.1	28.9	27.0	24.9
Surface of mesentery.....	33.5	32.8	30.0	28.9	27.0
Center of mass of exposed intestines	35.3	34.6	33.2	31.3	28.2
Guinea pig No. 2—					
Surface of intestine.....	25.0	25.5	25.8		
Surface of mesentery.....	27.1	29.0	28.3		
Center of mass of exposed intestines	30.4	32.7	31.5		
Rabbit No. 1—					
Surface of intestine.....	32.5	34.4	31.9		
Surface of mesentery.....	35.0	35.7	32.1		
Center of mass of exposed intestines	39.0	38.9	39.8		

When the intestinal surface was yet moist from the intraperitoneal secretions its temperature approached that of its own mesentery. At the same time the tem-

perature in the mass of exposed intestines was usually one or two degrees Centigrade warmer. Simultaneous exposure of moist and dry surfaces of the exposed gut showed the moist surface to average about 2.0 C. warmer. The dry surface on the exposed gut was found to be cooler than the simultaneous temperature of its own exposed mesentery. The difference was usually 1.5 C. to 2.5 C., but varied as much as 3.5 C. The temperature in the center of the mass of intestines outside the cavity was 2.5 C. to 4.0 C. (or more) greater than that of the exposed mesentery; and 3.5 C. to 6.0 C. (and sometimes more) greater than that of the exposed gut. Likewise it was usually greater than the temperature in the rectum when taken at the same time.

The temperature of the surrounding atmosphere exerts a certain influence upon the external or surface temperature of the exposed intestine. This surface temperature tends to become the same as that of the surrounding air if the temperature in the mass of exposed intestines is not too much higher or lower. If a considerable mass of intestines is exposed the temperature of the external mass approaches that of the normal body temperature. Hence if the temperature of the air is within two or three (or sometimes four or five) degrees Centigrade of the animal's body temperature the intestinal surface temperature will be that of the air. When the difference is greater the surface temperature tends to parallel the temperature in the mass of exposed intestines. (Table 27.)

TABLE 27.
*The Effect of the Temperature of the Surrounding Air Upon
the Temperature of the Exposed Viscera*

	Time in Minutes													
	0	5	10	45	60	75								
Guinea pig No. 1—Atmosphere.....	28.2	28.3	28.3	28.8	32.2	32.2								
Surface of intestines.....	28.7	28.8	28.8	30.2	30.7	32.2								
Center of intestines.....	31.8	31.0	30.9	35.3	35.1	34.8								
Guinea pig No. 2—Atmosphere.....	27.2	25.1	26.3	27.9*	29.1	26.8	62	79	82	179	187	267		
Surface of intestines.....	26.1	26.2	25.6	27.9	26.6		25.5	26.5		25.0	25.8	27.3†		
Center of intestines.....	28.1	27.9	28.5	30.0	30.3	34.0	35.6	31.8	33.9		31.5	33.1		
Guinea pig No. 3—Atmosphere.....	29.2	28.2	28.9	26.8	25.7									
Surface of intestines.....	30.5	31.5	28.9	27.0	24.9‡									
Center of intestines.....	35.3		33.2	31.3	28.2									
Rabbit No. 1—Atmosphere.....	28.8	29.8	25.4	24.4										
Surface of intestines.....	37.8	34.4	29.1	25.7										
Center of intestines.....	39.3	38.9	38.8	37.2										
Rabbit No. 2—Atmosphere.....	28.9		27.3	25.1										
Surface of intestines.....			30.5	26.4										
Center of intestines.....														

*Lamp (heat) brought closer.

†Intestines were just handled.

‡Intestines just handled very roughly.

‡Note the fall in temperature in this animal after very rough handling compared to the rise in temperature in the previous animal after gentle handling.

TABLE 28.
*The Effect of Hot Wet Towels Placed Over the Exposed
Viscera*

	Time in Minutes Before (—) and After Towels Applied											
	—8	0*	3	5	10†	15	20	25	30	35		
Guinea pig No. 1—Towel on surface.....	32.2	43.0	40.0	35.0	40.0	45.0	40.0	35.5	33.0	37.5		
Center mass of intestines outside.....	34.8	34.9	35.3	35.3	35.8	35.6	35.8	35.5	35.0	35.1		
Center mass of intestines inside.....	35.3	35.3	35.4	35.5	35.7	35.7	35.8	35.7	35.5	35.5		
Guinea pig No. 2—Towel on surface.....	25.8	35.6	32.6	26.5	34.1	32.9	33.2					
Center mass of intestines outside.....	31.5					33.3	33.7					
Center mass of intestines inside.....	36.2		36.4	34.7	33.6	35.4						
Rabbit No. 1—Towel on surface.....	30.2	38.1	35.3	36.4	36.3	35.8	38.1	39.9	37.9	36.4	38.5	
Center mass of intestines outside.....	38.5	38.5	38.5	38.7	38.8	39.1	39.0	39.5	39.5	39.2	38.8	
Center mass of intestines inside.....	39.8	39.7	39.8	39.8	39.8	39.8	39.9	39.9	39.9	39.9	39.9	

*Hot towels applied.

†Hot towels reapplied.

Hot wet towels at temperatures not to exceed 45.0 C. kept the intestinal surface practically up to the temperature of the mass of exposed intestines. The temperature of the mass of exposed intestines could be raised small amounts, as 0.8 C. to 1.2 C., in ten to twenty minutes. The temperature of the mass of intestines remaining outside the peritoneal cavity was usually not raised over 0.2 C., but might go up to 0.5 C. or 0.8 C. if a large mass of intestines were exposed outside the cavity. The surface temperature changed quickly as the towels cooled and were reheated and reapplied; the temperature of the external mass lagged through a set of somewhat similar changes. But the viscera inside had a gradual temperature increase, followed by a gradual temperature decline. (Table 28.)

Cool wet towels at temperatures not below 25.0 C. lowered the intestinal surface temperature of the exposed viscera to which they were applied. The actual

temperature varied with the temperature of the towel and the length of time during which it had been applied. The usual surface temperature change was an immediate temperature decline, followed by a rise as the heat of the viscera warmed up the towel. After this acme had been reached there was a gradual decline as the moist towel cooled from evaporation and cooled the intestinal surface with it. If the towel became dry the visceral heat then would raise the temperature again. The temperature in the center of the mass of external viscera was usually cooled down from 1.0 C. to 2.5 C. in thirty minutes. The temperature of the mass of intestines yet remaining inside cooled 0.5 to 1.0 C. in this same time. (Table 29.)

Cool towels applied to exposed viscera caused a very erratic curve of the intestinal surface temperature values. This was usually introduced by an instantaneous sharp drop followed by a slower recovery, extend-

TABLE 29.
The Effect of Cool Wet Towels Placed Over the Exposed Viscera

		Time in Minutes Before and After Towels Applied							
		-2	0*	2	5	10	14	19	25
Guinea pig No. 1—Towel on surface.....	29.5	29.5	30.0	30.0	29.7	29.1	28.9	28.3	
Center mass of intestines outside.....	35.1	35.2	35.1	34.8	34.4	34.1	34.1	33.8	
Center mass of intestines inside.....	35.5	35.5	35.5	35.3	35.1	35.0	34.8	34.6	
		-1	0*	2	5	10	15	20†	25
Guinea pig No. 2—Towel on surface.....	33.2	25.0	33.2	26.0	26.3	27.4	33.0	29.4	
Center mass of intestines outside.....	33.7	33.7	33.5	33.2	34.3	32.7	32.5	33.5	
Center mass of intestines inside.....	35.4	35.4	35.4	35.2	34.9	35.1	35.1	35.1	
		-1	0*	2	5	10	15‡	20	25
Rabbit No. 1—Towel on surface.....	34.4	26.3	28.0	28.1	28.2	30.0	30.1	30.2	
Center mass of intestines outside.....	38.9	39.0	38.8	38.8	38.8	38.8	38.5	38.3	
Center mass of intestines inside.....	40.1	40.1	40.1	40.1	40.0	39.9	39.8	39.8	
		-1	0*	2	5	10	15		
Rabbit No. 2—Towel on surface.....	33.1	32.0	31.0	30.0	29.5	31.5			
Center mass of intestines outside.....	37.8	37.2	37.1	37.3	35.1	33.1			
Center mass of intestines inside.....	39.9	39.9	39.9	39.8	39.8	39.7			

*Cool towel applied.

†Towels removed.

‡Cool towels reapplied.

TABLE 30.
Alternating Temperature Changes After Application of Cool Towels to Exposed Viscera
Time in Minutes After Towel Applied

	0	1	2	5	6	7	10	13	15					
Rabbit No. 1—Towel on surface.....	26.3	...	...	28.1	28.0	28.2	28.2	29.1	30.0			
Center mass of intestines outside....	39.0	38.9	38.8	38.8	38.9*	38.9	38.8*	38.8	38.8					
Center mass of intestines inside....	40.1	...	...	40.0	40.0	40.0	40.0	39.9	39.9			
	0	1*	2*	5*	10*	15	20	25	30					
Rabbit No. 2—Towel on surface.....	30.0	26.4	30.3	29.6	29.7	29.8	30.0	30.1	30.2					
Center mass of intestines outside....	38.8		38.8				...	38.5	38.4					
	0	2	2½	3	4	4½	5½							
Rabbit No. 3—Towel on surface.....	34.2	26.0	...	...	...	...	...		
Center mass of intestines outside....	37.5		36.7	36.8	36.4	36.2	36.0							
	0	1	2	3	4	5	5¼	5½	5¾	6	6½	6¾	8	10
Rabbit No. 4 Towel on surface.....	33.1	32.0
	37.3	37.2*	37.1	37.1½*	37.1*	37.1½*	37.2	37.2½	37.2*	37.2½*	37.3	37.2*	37.1—	37.1*
Center mass of intestines outside....	37.3	37.2*	37.1	37.1½*	37.1*									

*Note change of direction of temperature from higher to lower then higher, and vice versa.

ing over the succeeding period of fifteen to twenty minutes as shown in Table 29.

The cool towels applied to the exposed viscera in addition to the gross changes in surface temperature of the exposed viscera as just previously shown also caused simultaneously fluctuating curves in the values not only of the surface temperatures beneath the towels but also in the temperatures in the center of the mass of intestine outside of the peritoneal cavity. These consisted of two to as many as eight direction fluctuations, each ranging in value from 0.1 C. (0.05 C.) to 0.4 C. The changes were somewhat difficult to decipher because of their small amplitude and short duration. The probable explanation is that they were produced by vascular spasms which were induced by the coolness of the towels; the minute decreases in temperature following a spasm being superseded by an increase in temperature as the spasm was temporarily released allowing the freer influx of arterial blood. (Table 30.)

CLINICAL OBSERVATIONS

A. In the Operating Room.

In taking temperature determinations at the operating table we confirmed the findings previously obtained with the animals in so far as our limited time allowed. This is a field which should yield fruitful results to further observations.

Chart A.

Hernia and Hydrocele Operation

	Temperature C.
8:35 Skin incision	
8:43 Subcutaneous tissue	33.2 C.
8:43 Exposed testicle	30.9 C.
8:44 Testicle replaced into scrotum.....	
8:48 Subcutaneous tissue	32.4 C.
8:58 Testicle withdrawn for temperature determination	35.4 C.

In one instance in doing a combined inguinal hernia and hydrocele operation the temperature of the surface of the testicle rose towards normal 4.5 C. in fifteen minutes after it had been replaced within the scrotum. The decreased temperature had resulted following the incision, exposure, and removal into operating room atmospheric temperature. (Chart A.)

Chart B.

Intestinal Resection

8:25 120 mg. novacaine.	
8:30 Incision through left rectus muscle.	
8:36 Omentum	36.0 C.
8:37 Parietal peritoneum	37.7 C.
8:38 Jejunum, inside abdomen, but exposed.....	36.7 C.
8:38 to Removal of left one-half of transverse colon and part of descending colon.	
9:22 Parietal peritoneum, well posteriorly.....	36.1 C.
9:23 Omentum	35.4 C.
9:23 Stomach	36.1 C.
9:24 Jejunum, of left upper quadrant, not previously exposed	36.9 C.

In this case in which temperatures were taken during an operation for intestinal resection it was noted that, as usual, those intestines well away from the incision and not exposed had the highest temperature value. (Chart B.)

Chart C.

Cholecystectomy.

8:33 Air	36.2 C.
8:34 Omentum, surface of.....	34.4 C.
8:35 Subcutaneous fat in wall of wound.....	34.6 C.
8:35 Under surface of liver.....	36.3 C.
8:49 Upper surface of liver after cholecystectomy..	37.8 C.
8:55 Exposed liver surface.....	37.0 C.
9:09 Subcutaneous fat, as above.....	35.6 C.
9:22 Skin after operation.....	34.0 C.

In an instance in which operation was performed for cholecystitis the determinations read by a student nurse seemed to indicate a rise of temperature in the space between the liver and the diaphragm of 1.7 C. in the fifteen minutes elapsing during the removal of the gall-bladder. The operating light was focused in the wound during this time, as usual. In another cholecystectomy (shown in Chart C) there seemed to be a higher temperature in the region between the liver and the diaphragm than in the other tissues examined.

Chart D.

Appendectomy.

11:04 Atmosphere above operating table.....	30.2 C.
11:04 Subcutaneous tissue	34.1 C.
11:06 Cecum, having been exposed for two minutes..	32.9 C.
11:12 Skin	34.7 C.
11:33 Parietal peritoneum, unexposed.....	37.7 C.
11:42 Subcutaneous tissues	34.4 C.
11:51 Skin near wound.....	34.4 C.
11:52 Cheek	32.4 C.
11:53 Left clavicular region.....	32.6 C.
11:56 Dorsum of right foot.....	32.2 C.
11:57 Chest, midline	33.3 C.

In an operation for appendicitis under general anesthesia, with the surrounding air definitely cooler than the body temperature, it was noted that the temperature of the exposed cecum sank definitely and rapidly below the temperature of the incised tissues of the wound's edges; and these in turn were much cooler than the parietal peritoneum which had been unexposed. (Chart D.) Although these temperatures are lower than the average body temperatures (37.0 C.) they are yet higher than other body surface temperatures of this patient. (Chart D.)

Chart E.

Prostatectomy.

8:34 Subcutaneous fat of abdominal wall.....	36.0 C.
8:36 Surface of bladder.....	37.5 C.
8:42 Bladder mucosa	38.3 C.
8:42 to Removal of Prostate.	
9:01	
9:01 Bladder mucosa	35.2 C.
9:13 Subcutaneous fat	33.3 C.

In a one-stage suprapubic operation for removal of the prostate it was noted that the internal bladder temperature (mucous membrane) decreased 2.3 C. during nineteen minutes, the prostate having been removed during that interval. (Chart E.)

B. On the Wards.

Decreases in the intraperitoneal temperatures of two patients on the wards following the application of ice bags to the abdomen were studied.

Chart F.

Ascites from Hepatic Cirrhosis

Temperature reduction beneath parietes of left lower quadrant of a male, age fifty-four years, with abdominal ascites (hepatic cirrhosis).

Time Elapsed in Minutes										
0	2	3	5	10	14	19	25	30	34	
37.7	37.3	37.1	36.6	35.0	34.1	34.2	34.0	33.9	33.5	

The first patient was a male, aged fifty-four years, with marked abdominal ascites from hepatic cirrhosis. Following one of the paracentesis procedures (through the midline below the umbilicus) a special terminal constructed partly out of a catheter (No. 12 French) was inserted through the cannula and directed toward the left lower quadrant. An ordinary ice bag with cover was applied. The intraperitoneal beneath the abdominal parietes was reduced 4.2 C. (37.7 C. minus 33.5 C.), or 7.6 Fahrenheit, in thirty-four minutes. (Chart F.)

Chart G.

Ascites from Cardiac Decompensation.

Temperature reduction beneath parietes of right lower quadrant in a female, age forty-eight years, with abdominal ascites (cardiac decompensation).

Time Elapsed in Minutes												
0	2	3	5	10	15	19	25	29	34	40	46	
38.2	37.8	37.8	37.3	36.5	34.8	33.7	31.7	30.8	30.3	29.6	29.4	

The second patient was a female, aged forty-eight years, with marked abdominal ascites following cardiac decompensation. Here also following one of the paracentesis procedures the special terminal was inserted and directed toward the right lower quadrant. The intraperitoneal temperature beneath the parietes was reduced 8.8 C. (38.2 C. minus 29.4 C.), or 15.7 degrees Fahrenheit, in forty-six minutes. (Chart G.)

SUMMARY

1. The normal intraperitoneal temperature of guinea pigs and rabbits varied for the individual and varied in the individual in different locations. For the different individuals the comparative temperature changes were rather similar.

2. Cold, applied for thirty minutes or more by means of an ice bag, lowered the subjacent intraperitoneal temperature an average of 11.3 C. in twelve guinea pigs; lowered the temperature an average of 7.2 C. in six rabbits; and lowered the temperature 4.2 C. and 8.7 C. respectively in the two human subjects.

3. Shivering of the animal tended greatly to reduce the rate of decrease of the temperature. The temperature actually increased 2.4 C. in one case in which convulsions also intervened.

4. Heat, approximately 50.0 C., applied for thirty minutes or more, by means of a hot water bottle, raised the subjacent intraperitoneal temperature an average of 4.8 C. in twelve guinea

pigs; and raised the temperature an average of 6.0 C. in six rabbits.

5. Cold caused a greater decrease in intraperitoneal temperature below normal than heat did above normal. Cold also produced its change in less time. After a latent period of variable length both cold and heat had a period of maximum change per unit of time, followed by a much smaller change per unit of time. The maximum difference in temperature between the external and internal surface is theoretically 37.0 C. in the application of cold; and theoretically 13.0 C. (or 15.0 C.) in the application of heat. Actually the difference was not this great.

6. When the external cold was removed the intraperitoneal temperature slowly approached toward normal. When the external heat was removed the temperature rapidly fell toward normal, and then more slowly sank below normal.

7. When the intraperitoneal temperature was below normal the application of heat raised the temperature to normal in much less time than was then required to elevate the temperature the same number of degrees above normal.

8. When the diathermy was applied through the diaphragmatic areas by far the greatest increase in temperature was in the sub-diaphragmatic regions. In the pelvis and rectum, especially the latter, the change was very slight.

9. With the diathermy applied to the hind legs the major temperature rise was in the pelvis and rectum. In the rabbits with a rapid respiratory rate the subdiaphragmatic temperature rise was about as great as there; in other animals the subdiaphragmatic rise was not nearly as great.

10. The discontinuance of diathermy when applied about the liver was followed by a slow but constant increase in temperature in the pelvis and rectum for twelve to twenty-five minutes. When diathermy was discontinued from the hind legs an increased temperature occurred in pelvis and rectum and at times a small increase also occurred in the subdiaphragmatic region.

11. Rough handling of exposed intestines caused a drop in temperature of these viscera; this was shortly followed by a rise to an even higher temperature.

12. Viscera exposed outside the abdominal

cavity showed a decreased temperature compared to the uneviscerated intestines. A small mass of intestines showed a greater drop in temperature than did a much larger mass when exposed, provided the exposure did not last over sixty to ninety minutes.

13. The dry surface of the exposed viscera approximated that of the surrounding air if the temperature was within two or three degrees of the temperature of the mass as a whole. If the difference was greater the surface temperature tended to parallel the temperature of the mass of exposed intestines.

14. Exposure of eviscerated intestines over a period of time, especially if the mass of intestines was large, caused a decrease in the temperature within the body cavity.

15. The exposed dry surface of the gut was about two degrees cooler than the exposed mesentery of the same gut. This exposed mesentery was two or three degrees cooler than the mass of eviscerated intestines.

16. Hot wet towels aided in keeping up both the temperature of the intestinal surface and the temperature of the mass of intestines to practically that of the uneviscerated intestines.

17. Cool wet towels lowered both the surface temperature and the temperature of the mass of exposed intestines. The temperature of the inside mass of intestines was lowered 0.1 C. to 1.0 C.

18. Cool wet towels applied to the surface of the exposed viscera caused a very peculiar curve of temperature values in the mass of exposed viscera. Apparently this was due to arterial spasms stimulated by the coolness of the towels.

19. At the operating table variations in intraperitoneal temperature and decreases upon exposure were confirmed in human beings.

20. In one instance a testicle exposed less than eight minutes during a combined hernia and hydrocele operation rose 4.5 C. when replaced inside the scrotum within the following fifteen minutes.

21. In two patients with abdominal ascites the application of ice bags, the outside temperature of which approximated 10.0 C. to 12.0 C., reduced the temperature beneath the parietes 4.2 C. and 8.7 C. respectively.

CONCLUSIONS

1. The therapeutic use of cold applied to the external abdominal wall is accompanied by a decrease in the subjacent intraperitoneal temperature. A decreased temperature but of less degree is found also in neighboring intraperitoneal regions.

2. The therapeutic use of heat applied to the external abdominal wall is accompanied by an increase in the subjacent intraperitoneal temperature.

3. Diathermy applied about the diaphragmatic region would be quite effective during an operation in maintaining the intraperitoneal temperature in the upper abdomen; and to a less degree in the lower abdomen.

4. The application of cold, heat, or diathermy to the abdominal wall is followed by a change in the general body temperature as evidenced by the changes in the more distant intraperitoneal regions and in the rectal temperature. The amount of change is influenced by the total body area which is contacted by the thermal agent, by the temperature of the thermal agent, by the length of time the agent is applied, and, especially in the case of diathermy, by the depth of narcosis (light narcosis being accompanied by dyspnea and a lesser change in temperature).

5. The temperature of the rectum, both under normal conditions and when under the influence of thermic agents applied to the abdominal wall, is markedly variable when compared to the temperature of the pelvis and other regions within the abdominal cavity. Hence the value of the rectal temperature as an indicator of the exact temperature within the abdominal cavity, and presumably other regions of the body, is seriously questioned. If, as seems at times, the rectal temperature represents a purely local temperature determination its value then must be only suggestive rather than decisive.

6. Since the rectal and pelvic temperatures continue to rise for fifteen to twenty-five minutes after removal of the diathermy applied about the diaphragmatic region, we can assume that great readjustments are taking place in the circulation, resulting in both the redistribution of and the releasing of heat. It is interesting to speculate upon the possible extremely high intraperitoneal temperatures that could occur with a patient in a Turkish bath or any thermal or

electrical contrivance for elevating the body temperature. It is possible that the intraperitoneal temperature would be enormously higher than even the very high oral or rectal temperature that could be thus obtained.

7. Exposure of and moderate handling of the intestines for sixty to ninety minutes caused no changes in temperature which would seem to be deleterious. Possibly this fact should not be lost sight of in operations upon the abdomen.

8. Hot wet towels are of proven value both in retaining the practically normal surface temperature and the glistening appearance of the exposed intestines, and in maintaining the normal temperature of the mass of exposed intestines.

9. When cool towels are once applied, if unfortunately they are the only ones to be obtained, they should not be changed frequently, but should be allowed to remain in situ as long as needed.

10. If intestines must be brought out of the abdominal cavity it appears to be extremely important to have an adequate incision, because the partial occlusion of the circulation from inadequate exposure produces a marked decrease in temperature.

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THE RAW APPLE TREATMENT OF DIARRHEA IN PEDIATRIC PRACTICE

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A survey of the American literature reveals few articles on this subject. Up to the present there have been only six papers written describing this method of treatment.

In January, 1933, Birnberg¹ wrote the first paper for an American publication. It was a splendid article in which he gave an historical review of the subject and described his experiences with a large number of cases of diarrhea treated with raw apple. He also gave the theoretical considerations of its therapeutic value.

The two most recently papers by Kaliski² and by Giblin and Lischner³ are also comprehensive articles describing their satisfactory results with this mode of therapy in their cases of diarrhea.

Papers by Reglien⁴ by Rowley⁵, and by McCaslan⁶ appeared in the interim.

The European literature, on the contrary, contains vast numbers of reports which are all in accord in their belief that this treatment has definite therapeutic value. Since 1930 about 60 articles have appeared in practically every foreign language, principally in German.

Heisler, a practitioner in the Königsfeld Schwarzwald, used raw apple in treatment of diarrhea for twenty years before he published the results of his observations in "Dennoch Landarzt" and in "Ärtzliche Rundschau" in November 1929.⁷ Credit is also given to Sister Frieda Klimsch, who had used this treatment for several years in a children's sanatorium in Königsfeld. Moro's⁸ reports of its use in his clinic are directly responsible for the popularization of this treatment. His suggestions have been followed by other pediatricians whose results have also proven to be very satisfactory. Moro's original report appeared in December, 1929, at which time he related his experience with 52 cases of diarrhea in infants and children. Cases included in this series were 22 acute dyspepsias, 15 dysenteries, 1 typhoid, 8 chronic dyspepsias, 5 celiacs and 1 mucous colitis. His clinical observations were as follows: normal stools in two days, frequently in one day; vomiting ceased; temperature dropped; abdominal cramps and tenesmus disappeared. His results with chronic diarrhea were not as certain or regular as in the acute cases. In celiac disease he found that they temporarily had formed stools.

It is with a great deal of suspicion that one originally looks upon the suggestion that raw apple be used in the treatment of diarrhea. We are all familiar with the expression "an apple a day keeps the doctor away," but have analyzed this as being due to the regularity and free action of the bowels. It is, therefore, with considerable timidity that a pediatrician would recommend to the mother of a diarrheal child that she feed her youngster nothing but raw apple for a day or two. This suggestion is usually followed by the expected reaction on the part of the mother, but upon the Doctor's insistence she will usually agree to go through with the treatment.

In my practice, both private and clinic, I

have never found any one form of treatment that so simply and uniformly corrected a diarrheal tendency. These cases have varied from mild diarrheal conditions to severe cases with watery stools containing varying amounts of blood and mucus. Patients varied from the new-born period to eight years of age.

In no instance has an aggravation of the bowel condition been encountered and in many cases serious acute or subacute diarrheas, from a variety of causes, have within several hours taken an about face and quickly begun to improve. Many of these cases had had a fair trial on many other standard therapeutic procedures in the treatment of diarrhea in infants and young children such as protein milk, skimmed lactic acid milk, bismuth, paregoric, chalk-mixture, Kao-magma, tea, barley and rice-water. Some also had as supplementary therapy subcutaneous or intravenous fluids.

This series included diarrhea varied in etiology from those due to a simple dietary indiscretion, to those associated with parenteral infections. Stool frequency varied from 2 or 3 to 20 watery evacuations daily.

In Kaliski's series of 27 cases, ranging in age from 1 to 11 years, stool culture revealed *B. enteritidis*, *B. paratyphosus*, *streptococcus hemolyticus*, *B. pyocyaneus* and *staphylococcus albus*.

Giblin and Lischner's report includes 130 cases of enteritis, enteral and parenteral, treated with raw apple with a mortality of 0.8%.

The treatment is very simple, consisting merely of feeding the child scraped raw apple in varying amounts depending upon the patient's size and age. The caloric value of the scraped raw apple is 60 per 100 grams.

Heisler's^{9,10} suggestion is that 100 to 300 grams of apple be given per meal. For adults he recommends 7 to 20 medium sized apples per day. No exact dose can be recommended for children, but the average six-month-old infant can easily take 1 or 2 tablespoons every 2 or 3 hours. Weak tea ad lib. is allowed between feedings but all other food is prohibited.

This restricted feeding is continued for 24 to 48 hours, occasionally 72 hours, until the stools have definitely become more firm in consistency. This is frequently noted as early as 8 to 12 hours after the institution of the treatment. The patients usually take the apple readily for it is

sweet, palatable, thirst-quenching, and appetite satisfying. Associated vomiting usually ceases with the administration of the apple. It is exceptional for patients to refuse this fruit, but if the sour taste is objectionable, mashed banana or saccharin may be added.

The apple is peeled, scraped and mashed before feeding, although some clinicians prefer to use the apple with the peel, claiming for the outer covering many satisfactory therapeutic qualities.

Heisler believes that the uniformly good results obtained with this diet in practically every form of diarrhea, especially in children, is due to the detoxifying action of the apple pulp, the mechanical purification and the adsorptive power of this substance probably due to the malic acid. He considers the tannates to be of additional therapeutic value but since the apple contains only 0.05% of tannic acid, we can hardly give much credit to this substance. All of these factors serve to allay the irritation of the bowel's motor apparatus.

György concedes Heisler's theories and adds his own idea which claims for the pectins a very valuable place. Mayloth¹¹ claims that pectin has a primary colloidal and buffer property and that it regulates the H ion concentration. It adsorbs toxins and acts as an inhibitor of peristalsis through its calcium and magnesium content. The apple adsorbs and enmeshes the bacteria, mucus and toxins from the mucus membrane of the bowel. Mayloth found that this diet lost its effectiveness upon the addition of a ferment which destroys cellulose and pectin.

Schreiber¹² found that this diet favored a marked growth of colon bacilli with the disappearance of pathogenic organisms from the stool.

Schachter¹³⁻¹⁶ has had good results feeding raw apricots and pears to a 13-month-old infant who had soft bloody stools for 10 days and who within 48 hours developed normal stools on the raw fruit treatment. He used these fruits because of their botanical relationship to apples when good apples were not available.

To insure a constant and uniform supply of good apple pulp the Germans have prepared powdered dried fresh apples called "Aplona." One hundred grams of the powder represents 1000 grams of fresh apple. It is administered in warm water or weak tea and sweetened with

saccharin. The powder is allowed to remain in the water 5 minutes and solutions of 1 to 10% are used. Wolff¹⁷ recommends the 2% solution being used under 6 months of age.

A most interesting report appears in the German literature. It is a letter sent to Moro¹⁸ by a Dresden soldier who relates his experiences during the war when he and four of his comrades were suffering from severe diarrhea with bloody stools. It was in July, 1916, near Tarnopol in Galicia. He and his four comrades came upon an apple orchard and being hungry, thirsty and dehydrated, all but one of the five ate freely of these only partly ripe apples, peeling and all. The four who ate large numbers of these apples were quickly relieved of their diarrheas. One soldier abstained from the apple diet because he feared it would aggravate his bowel condition. This soldier died with a severe diarrhea.

Kohlbrugge¹⁹ advises cooking the whole apple because the layer just beneath the peeling is richer in acid than the pulp. He theorizes that the reason for the relative freedom of breast fed infants from diarrhea and for its value in the treatment of diarrhea in early infancy is due to the fact that breast milk has more acid than cow's milk. He considers tannates of no value in diarrhea but that the Säure of apples and other fruits produce the good influence. He also claims to have had good results with the feeding of lemon juice to children with diarrhea. Heisler has found the juice of strawberries and of red currants valuable.

In 1908, Moro recommended carrot soup in the treatment of diarrhea. He considers the therapeutic principle somewhat similar to that of the raw apple diet.

CASE REPORTS

1. Baby W., a female infant, weighed 7 lbs. 8¼ oz. at birth. The delivery was normal and the mother was healthy. At 5 days of age vomiting developed and there was a loss of one lb. in weight with marked dehydration. The case was seen with Dr. I. Singer. At 8 days of age there were 5 to 6 liquid stools daily. There was a low grade temperature and the diagnosis was infectious diarrhea.

The baby failed to respond to the feeding of breast milk, tea and Ringer's solution along with subcutaneous injections of 5% glucose in saline, 60 cc. four times a day. This regime was continued for 2 days with no improvement in the baby's condition. The subcutaneous fluids were discontinued and calcium carbonate 5 grains q.i.d. and atropine sulphate 1/1000 grain q.i.d. were

given. The regurgitation and liquid stools continued, dehydration was extreme and the baby was irritable, fretful, listless and passed some blood with the watery evacuations.

At 15 days of age the weight was 5 lb. 11.5 oz. and the nurse recorded the baby as extremely listless. The prognosis was considered very poor. At 1:30 P. M. on this day, raw apple was given to the infant, 2 teaspoons every 2 hours. The infant took it eagerly and retained it, never once vomiting the feeding. Tea was taken well between feedings. At 8:30 P. M. there was a small amount of liquid stool with particles of fibrous material. At 2 A. M. there was a moderate amount of semi liquid stool and at 6:30 A. M., 17 hours after this treatment was instituted the nurse's note was "baby's condition seems improved." At 2 P. M., 24½ hours after the apple diet was begun, breast milk 1 oz. every 3 hours was given and retained. At 8 P. M. there was a small curded stool. The breast milk was gradually increased in amount and at 21 days of age the weight was 6 lbs. 4 oz. At 9 months, never having had a recurrence of this bowel condition, the baby weighed 22.5 lbs.

2. Baby B., a male infant, 1 month of age, weighing 4 lbs. 12 oz. was admitted September 2, 1935, with a history of vomiting and failure to gain. The next day there were 2 liquid stools and the passage of 2 to 6 copious liquid stools continued daily for 12 days. At 4 P. M. September 15, scraped raw apple treatment was begun. This day there had been 3 green liquid and one green soft stool. September 16 there was no stool and the following day 1 soft stool. Evaporated milk formula was given gradually and well tolerated after 48 hours of the raw apple diet.

3. Baby S. W. A four month old female infant weighing 10 lbs. was admitted September 24, 1935 at 2:30 P. M. with a history of 15 liquid stools daily for 2 days. Scraped raw apple diet was begun at 5 P. M. She had a soft stool at 9:30 P. M. and at 11:30 P. M. The next day there were 3 small soft stools and they continued to be normal.

4. B. J., a 7 month old male infant weighing 14 lbs. was admitted September 14, 1935, with a history of 6 to 8 liquid stools daily for 3 weeks. He had 2 to 5 liquid stools with mucus the first 5 days after admission. No improvement was noted with skimmed lactic acid milk and tea. On September 19 at 2 P. M., raw apple ½ oz. every 2 hours was started. This day there were 5 green semi-liquid stools, 1 green liquid and 1 green soft. The next day there were 2 soft green and 1 semi-soft green stool. On September 21, the 2nd 24 hours of the 48 hour apple diet, there was 1 soft yellow stool. Normal stools followed the institution of a full diet.

A sister, M. J., admitted on September 14 with a history of severe diarrhea, died the following day of gastroenteritis and bronchopneumonia.

5. E. W., a 5 months old male infant weighing 12 lbs. 15 oz. had had green loose stools for 2 days prior to admission. From July 15 to 21 he had 1 to 5 liquid stools daily. On July 22 raw apple diet was started. That day there was 1 yellow formed stool and the next day 1 soft yellow stool. Normal evacuations prevailed on a milk mixture thereafter.

6. E. F., a 7 month old male infant weighing 12 lbs., was admitted June 28, 1935, with a history of 10 to 15 liquid stools daily for 4 days. Persistent diarrhea with septic temperature was present for two weeks after admission. There were 5 to 10 liquid green stools daily in spite of attempts at correction with skimmed lactic acid milk, evaporated milk, tea, subcutaneous fluids and Kao-magma.

When placed on a raw apple diet, stools became soft in consistency and few in number within 48 hours and recovery was rapid and complete on a milk mixture.

7. M. M., a 3½ year old girl, had an acute enteritis which cleared up in 18 hours after raw apple diet was instituted.

8. R. S., a 3½ month old female infant, had a parental infection with frequent loose stools and loss of weight. The duration was 8 days. She failed to respond to anti-diarrheal medication of bismuth and paregoric with a lactic acid milk formula. The raw apple diet produced improvement in 36 hours with no recurrence of diarrheal symptoms.

9. S. T., a 3½ year old boy, had watery evacuations with extreme tenesmus for 4 days. The last day the stools contained bright red blood. The child failed to respond to a constipating diet and he refused all medication. The raw apple diet was begun and tenesmus and frequent stools were relieved in 10 hours.

10. I. R., an 11 month old female infant, had an acute enteritis secondary to an upper respiratory infection. Raw apple diet brought about the passage of formed stools in 16 hours. There was no recurrence of symptoms.

11. A. H., a 10 year old boy, had ulcerative colitis for 2.5 years with frequent evacuations containing large quantities of blood. He was placed on the raw apple diet and his tenesmus disappeared. The stools became firm and much less frequent, but the blood passage was only slightly diminished. The abdominal complaints of the patient were greatly minimized. Although no cure was anticipated in this case, it was interesting to observe that no aggravation of the bowel condition was produced by the raw fruit diet.

Twelve other cases with clinical records similar to those previously cited, showed quick relief from their diarrhea within 18 to 36 hours after the institution of the raw apple diet.

CONCLUSIONS

1. The raw apple diet as a treatment for diarrhea in infants and young children deserves much more attention than it has heretofore received in this country.

2. Twenty-three cases of enteral and parental diarrhea are here reported with uniformly good results within 14 to 48 hours after the institution of this treatment.

3. The youngest patient was 15 days old and the smallest 4 lbs., 12 ozs.

4. The acute diarrheas are the quickest to respond with firm stools.

5. This diet must exclude all other foods except weak tea or water.

6. This treatment has a definite place in the management of diarrhea cases especially where medication is refused or is difficult to administer.

7. The beneficial effects of the raw apple in these cases is probably due to the adsorptive power of the apple pulp, the malic acid, the pectins and possibly the tannates.

8. No other single therapeutic measure has so simply and uniformly corrected such diarrheas as are here reported.

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310 South Michigan Ave.

LOOSE LEAF SYSTEM

Professor: "Can you give me an example of a commercial appliance used in ancient times?"

Student: "Yes, sir, the loose-leaf system used in the Garden of Eden."—*Staley Journal*.

TWO MORE GUESSES

Excited young father: "Quick! Tell me! Is it a boy?"

Nurse: "Well, the one in the middle is."

SYPHILITIC AORTITIS, PATHOLOGY, DIAGNOSIS AND THERAPY

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Frequency of Syphilitic Aortitis. Syphilis is responsible for about 20% of all cases of chronic disease of the cardiovascular system found in adults. About 20% of all persons with acquired syphilis develop cardiovascular disease, which is a late manifestation. The average length of time from infection to the onset of cardiovascular symptoms is about 15 years. In luetic aortic regurgitation the average latent period is 20 years, in aneurysm 22 years. At autopsy we find that 75% of persons with visceral syphilis have syphilitic aortitis. The serologic tests (Wassermann, Kahn) are positive in about 80% of the various groups of cardiovascular lues. There are therefore 20% of cases with luetic aortitis, aneurysm and luetic aortic regurgitation who give a negative Wassermann test.

There is a marked preponderance of the male sex in the entire picture of syphilis of the heart and aorta. About 80% of the patients are males. Yet there is no marked difference in the frequency of luetic aortitis in the two sexes.

In females luetic aortitis usually takes a benign course. The severe supra-valvular forms of the disease, which cause aortic regurgitation, stenosis of the coronary ostia and aneurysm, are much more common in the male than in the female sex. Of 80 syphilitic aneurysms of the aorta seen by Dr. Richard Jaffé at the Cook County Hospital in Chicago in five years only six were in women. Five of these were in negro women.

It is an established clinical fact that syphilitic heart disease is about four times as frequent in the negro as in the white. In the colored race aneurysms are twice as common as in the white race. There seems to be more severe destruction of the media by the spirochetes in the negro, both male and female. Another factor may be the greater number of hard manual laborers among the negroes. It is also significant that essential hypertension is about three times as prevalent among negroes as among whites, often with marked arteriosclerotic renal changes.

Greater damage to the media of the aorta, increased stress and strain, and the frequent occurrence of hypertension suffice to account for the higher incidence of aneurysm of the aorta and its large branches, and of aortic regurgitation, in the colored race. Jaffé found an incidence of 8.5% aneurysms in whites, and 16% in negroes among 103 cases of syphilitic aortitis. These 103 cases of aortitis were found in 1000 autopsies, making an incidence of 10.3%.

The percentage of aortic regurgitation found in cases of luetic aortitis averages 30%, of aneurysm about 35%. Stenosis of the ostia of the large arteries of the aorta is a frequent occurrence. The innominate, carotids and subclavians are involved in about 50%. About 60% of all cases of aortic regurgitation in patients past 40 years are syphilitic.

Pathology of Syphilitic Aortitis. Syphilitic aortitis is clinically a late manifestation of this disease. It is the most frequent cause of death in syphilis. The reason for the long average latent period of 15 to 20 years is not known. Infection usually occurs in the twenties and the highest incidence of luetic aortitis is near the 45th year. In congenital syphilis the latent period may be shorter.

The disease consists of a chronic inflammatory process which begins in the vasa vasorum of the adventitia and media. These small vessels undergo obliterative changes with secondary changes in the media. The media becomes infiltrated by round cells and plasma cells, the elastic fibers are destroyed. Small miliary gummas may even be formed, containing spirocheta pallida. There is an intimal thickening and wrinkling. The inner surface of the aorta becomes wrinkled and depressed by many small and large fibrous scars of pinkish or white color. Atheromatous changes are often combined with the luetic aortitis in an amount increasing with age. The mouths of the large vessels are often fibrosed and greatly constricted or entirely occluded. Thrombi may form in the narrowed lumen, especially when there is an atheromatosis. This stenosis of the ostia of the large arteries is of great value in diagnosis, leading to a pulsus differens, systolic thrills and murmurs along the course of the artery, or to complete absence of the pulse in one or both arms or even in the carotids. An absence of pulsation does not necessarily indicate

that there is no blood flowing through the stenosed ostia.

As the aortic wall (in some cases also the innominate, carotid, subclavian or other large artery) loses its elastic layer the wall becomes weakened, and it stretches under the influence of the blood pressure. We shall see that this dilatation of the aorta is the earliest diagnostic sign of syphilitic aortitis, and can be diagnosed in at least 75% of cases before the development of aneurysm, aortic regurgitation, or angina pectoris.

The width of the ascending aorta can be measured within 2 mm. with the fluoroscope and orthodiagraphic technique. It must be remembered that the aorta during life is stretched by the blood pressure, hence somewhat wider than post mortem. The determination of the size of the ascending aorta assumes the greatest importance in the early diagnosis of aortitis. The following figures may be accepted as normal values for the different ages:

30—40 years	2 —2.5 cm.
40—50 years	2.5—2.8 cm.
50—60 years	2.5—3.0 cm.
Over 60 years	3.0—3.5 cm.

When the orthodiagraphic measurement of the ascending aorta exceeds the above values syphilitic aortitis must be suspected. The length and width of the aorta depend upon the elasticity of the wall. When the elasticity is reduced the vessel becomes longer and wider. In old age this process is gradual and the above table gives the extent of the physiologic widening. With old age the aorta elongates and the arch rises, and the aorta becomes more tortuous. Hypertension may lead to slight widening and increased atheromatosis. The increased cardiac output in aortic insufficiency may cause some widening, together with the characteristic pulsation. Rarely rheumatic fever, mycotic infection, tuberculosis, or arteritis nodosa may lead to widening or aneurysm of the aorta.

Practically speaking, syphilis is the cause of aortic dilatation, and any marked dilatation must be looked upon as luetic.

The second important pathologic change is aneurysm formation. The aorta may dilate more or less uniformly, or locally. The wall may bulge in only one direction and produce a saccular aneurysm. Several bulgings may unite to form a large irregular aneurysmal sac. These may

reach huge proportions, causing pressure symptoms or even rupture. Clots may form in the large sacs, with narrow channels for the blood stream to the larger arterial branches. Calcification of the wall may lead to a stationary condition.

The third, and one of the most important pathologic changes, is aortic regurgitation. This is found in about 75% of the cases diagnosed clinically. The disease frequently attacks the aortic ring, especially at the commissures. The cusps become thickened, adhering somewhat to the aortic wall, and separate at the commissures. The ring becomes stretched, the cusps are too small to close the lumen in diastole and regurgitation results. There is regurgitation at each of the commissures when they are separated, and also in the center of the lumen: We need not here discuss the findings in aortic regurgitation.

Syphilitic aortitis causes regurgitation, *never a stenosis*. The only valvular lesion caused by syphilis is an aortic regurgitation, and rarely a pulmonary regurgitation. The mitral and tricuspid valves are not affected, except in rare instances of gumma of the myocardium.

The fourth important pathologic change is stenosis of the ostia of the coronary arteries. We have already discussed stenosis of the ostia of the large aortic branches. Coronary stenosis is a very frequent finding which leads to anoxemia of the heart muscle with angina pectoris, left ventricular failure with paroxysmal dyspnea (cardiac asthma) and pulmonary congestion, and often death. The stenosis is so gradual that one ostium may be totally occluded without producing clinical symptoms or any gross myocardial changes. During the months or years that elapse there is plenty of time for the collaterals to enlarge so that the heart muscle gets its blood supply from the other coronary: and this may suffice when there is no marked hypertrophy of the heart and the patient avoids exertion. I have seen at autopsy four cases of luetic aortitis with total occlusion of one coronary ostium in patients with no clinical history of angina pectoris. Sometimes the ostium is covered by a small flap-like thickening of the intima. Also the presence of an aortic regurgitation reduces the blood flow in the coronaries still further by lowering the diastolic blood pressure. Sudden death is quite common in such cases of aortic

regurgitation with stenosis of the coronary ostia. In very rare cases a supernumerary vessel may furnish blood to the myocardium.

A sudden occlusion of a coronary artery by a thrombus or embolus leads to myocardial infarction or myomalacia, with death from ventricular fibrillation, acute cardiac failure, or rupture of the infarcted area. Or, healing may take place with fibrosis, thinning, or partial heart aneurysm. This may also occur in syphilitic aortitis with sclerosis of the coronaries (which is non-syphilitic). The luetic stenosis is very slow and progressive, requiring years. The effect of a coronary occlusion, therefore, depends largely upon the rate of occlusion. It often appears as if the stenosis of the coronary ostia protects them to a certain extent against arteriosclerosis by reducing the blood flow and pressure in these small vessels. The length of time which is usually necessary for the development of uncomplicated syphilitic aortitis with angina pectoris or cardiac failure is about fifteen years.

Fifth, come the changes in the heart muscle itself. The heart is as a rule not affected by a luetic aortitis unless there be an aortic regurgitation or stenosis of the coronary ostia. Aneurysms may reach a very large size and yet the heart remain normal. With aortic regurgitation a great load is put upon the left ventricle and it undergoes marked hypertrophy and dilatation, often producing the "cor bovinum." There develops a relative mitral insufficiency with a change in the heart form. It becomes "mitralized." Then follows a compensatory involvement of the right heart with ultimate failure of the entire heart. In rare cases a diffuse syphilitic myocarditis is found, with marked cardiac enlargement and heart failure. Occasionally a gumma occurs in the bundle of His causing heart block, or a gumma leads to rupture of a papillary muscle. Syphilitic myocarditis is certainly much rarer than Warthin of Michigan believed. The fibrous changes found in older luetic individuals are more easily explained as a result of arteriosclerotic non-luetic coronary disease. Gummas or spirochetes are rarely demonstrable post mortem.

Diagnosis. In syphilitic aortitis the diagnosis is of greatest value to the patient in the early uncomplicated stage, before aortic regurgitation, aneurysm or angina pectoris have developed. I

shall, therefore, stress the signs and symptoms which enable us to make the earliest possible diagnosis. Although regurgitation and aneurysm require about 20 years for their development, aortitis undoubtedly begins years before this time. In the first few years after the primary infection a clinical diagnosis of syphilitic aortitis is usually not possible, although early changes in the aorta and other arteries may already be present. A roentgen ray diagnosis can often be made during the first five to ten years after infection.

The earliest and most important diagnostic sign in syphilitic aortitis is the demonstration of a widening of the ascending aorta, or any other part of the aorta on fluoroscopic examination. We have already stated that any ascending aorta more than 2.5 cm. in diameter up to the age of 40, or 3.0 cm. to the age of 60, or 3.5 cm. above the age of 60 should be suspected of being luetic. This is especially true when the patient has a positive Wassermann, Argyll-Robertson pupils, absent patellar reflexes, syphilitic scars, perforated nasal septum or palate, any form of visceral lues, or central nervous system syphilis.

The entire contour of the aorta can be studied with the fluoroscope, and the ascending aorta accurately measured. In normal persons the right heart border consists of the right auricle, ascending aorta, and superior vena cava. The ascending aorta forms only a slight convexity beyond the right border of the spine in the postero-anterior view. Often the ascending aorta is not at all visible on the right side, especially in ptotic individuals with medianly placed heart. In obese persons with high diaphragms the heart is pushed up and more transversely placed and the arch of the aorta widened. The "aortic window" between the ascending and descending portion appears larger, but the aorta itself is of normal calibre. In the first or right anterior oblique position careful rotation of the patient enables the examiner to measure very accurately the width of the ascending aorta. With experience one can diagnose an early syphilitic aortitis from the increased prominence of the ascending aorta on the right side; its curve becomes fuller and the density of its shadow is increased in proportion to the dilatation. Orthodiagraphic measurement shows it to be wider than the normal. The aortic knob on the left side is often

enlarged, and extends farther upward and to the left. The giving of barium paste enables one to measure the descending portion of the arch, from the concavity in the esophagus wall to the left border (Kreuzfuchs method). The normal symmetry is disturbed and the aortic arch becomes asymmetrical. The angle between the heart axis and the aortic oval often is altered (Kienböck's asymmetry rule).

Although hypertension, aortic regurgitation, isthmus stenosis and marked atherosclerosis may cause slight aortic widening they are as a rule easily distinguished from the asymmetrical aortic dilatation of syphilitic aortitis. It must be remembered that luetic aortitis and atherosclerosis are frequently associated. It is never safe to assume a marked aortic dilatation as due to atheromatosis or hypertension. A definite aneurysm is practically always luetic. I have seen many cases of aneurysm with high grade atheromatosis. Some of these aneurysms remain stationary for years.

The patient should be rotated in both the right and left oblique positions, and the wall of the aorta in all of its parts should be studied for parallelism. Any departure from the cylindrical form is significant. In this manner aneurysms in the anterior or posterior wall of the aortic arch will be detected, also the not uncommon retro-cardiac aneurysms of the thoracic aorta.

The second most important sign in early luetic aortitis without insufficiency is the *increased manubrial dulness*. Dilatation of the ascending aorta and arch usually produces dulness behind the sternum at the level of the second and often also the first right intercostal space. An area of dulness exceeding three inches (7.5 cm.) in width is very likely due to luetic dilatation of the aorta, or aneurysm. As the dulness increases it extends to the right and downward. It also extends to the left, but not so far. Dulness to the left of the spine posteriorly is quite common in dilatation of the descending thoracic aorta. The dilated aorta causes pulmonary compression and atelectasis and this is easily found on percussion to the left of the spine.

The increased manubrial dulness may be accompanied by localized pulsation, most often in the second right intercostal space near the sternum, or the second or third left interspace. An

episternal pulsation with a palpable aorta or aneurysm behind the sternum is diagnostic.

The third most important diagnostic finding is the *tambour or bell-like, ringing, aortic second sound*. It has been compared with the sound of the arabian drum or "tabourka." This peculiar musical quality is probably due to the tension on the aortic cusps produced by stretching of the ring, and perhaps also some loss in elasticity, and thickening, of the aortic wall. When accompanied by a distinctly palpable second sound or diastolic shock the tambour second sound is very suggestive of luetic aortitis. The heart sounds are often unusually well transmitted to the chest wall in the region of the dilated aorta or aneurysm, because the thin lung layer is displaced or reduced in size. The large artery lies in contact with the chest wall.

The changed character of the aortic second sound is the first physical sign in early luetic aortitis. In patients with marked hypertension it is more difficult to recognize the tambour sound.

A fourth frequent finding is a *systolic murmur at the base*, found in about two-thirds of the cases of uncomplicated luetic aortitis. The murmur is often harsh and heard best in the second right or left intercostal space near the sternum. It must be remembered that a systolic murmur at the base is a frequent finding in patients past middle life due to aortic atheromatosis or sclerosis of the aortic cusps in the absence of aortic syphilis. Therefore, a systolic murmur alone is not diagnostic of luetic aortitis. When due to syphilitic aortitis it is most likely produced by the intimal roughening and puckering, and also dilatation of the supravalvular portion of the aorta or the arch. Furthermore, the stretching of the aortic ring keeps the cusps under tension in systole. This is the most likely cause of the systolic murmur. The systolic murmur usually accompanies the diastolic murmur of regurgitation.

To diagnose an aortic stenosis, which cannot be due to syphilis, the systolic murmur must be accompanied by a systolic thrill, pulsus parvus, and evidence of rheumatic heart disease or subacute bacterial endocarditis. In rare cases arteriosclerosis of the valve may lead to a stenosis. In a young individual a systolic murmur in the aortic area, even when not accompanied

by a systolic thrill, justifies the diagnosis of an aortic stenosis due to rheumatic fever, especially when a mitral lesion is present. When an aortic stenosis is found it must have some other cause than syphilis. The writer has seen two cases of rheumatic aortic stenosis combined with luetic aortitis and aneurysm. In fact, the healed rheumatic aortic stenosis was given as the explanation for the absence of regurgitation in spite of marked dilatation of the entire ascending aorta and arch. I have stated in clinics that if a mild rheumatic aortic stenosis could be produced many of these patients with luetic aortitis would be protected against the most serious result of this disease, aortic regurgitation.

The importance of recognizing the fact that syphilis does not lead to aortic stenosis is well illustrated in the following interesting case observed two years ago:

Case 1. A young colored male, aged 35 years, presented himself in my ward because of the presence of a walnut-sized aneurysm of the right radial artery. This large pulsating aneurysm was located 2 inches below the right elbow. It measured about $1\frac{3}{4}$ by $1\frac{1}{2}$ inch. On examination of the patient the following were found: there was a rough systolic murmur and slight thrill with maximum intensity in the second right intercostal space and transmitted into the carotids. There was a soft systolic murmur at the apex. The heart was slightly enlarged to the left with normal configuration. On fluoroscopic examination the aorta was of normal size, the ascending aorta measuring 2.5 cm. in diameter. The patient had a daily temperature of 100 to 101° F. The spleen was palpable. The Wassermann test was 2+. My diagnosis was: rheumatic endocarditis of the aortic valve with slight stenosis of the aortic ostium, slight mitral insufficiency, and subacute bacterial endocarditis engrafted upon an older rheumatic endocarditis; mycotic aneurysm of the right radial artery. A few days later the blood culture was reported positive for streptococcus viridans, and few red blood cells were found in the urine. The patient was transferred to the surgical service of Dr. Raymond McNealy who removed the aneurysm. Microscopic examination revealed a mycotic aneurysm with acute inflammatory changes and streptococcus viridans in the wall of the aneurysm.

One might easily have made the diagnosis of syphilis because of the positive Wassermann and the radial aneurysm. But I know from previous experience that the Wassermann test is sometimes positive in subacute bacterial endocarditis. The presence of the aortic stenosis indicated definitely that we were dealing with a non-luetic process. The patient presented no signs of syphilis, and the spinal fluid was normal.

A fifth important sign in the diagnosis of syphilitic aortitis is the *pulsus differens*, or even total absence of pulsation in one or more of the

main branches of the aorta, the innominate, left carotid or left subclavian arteries. When the left carotid and left subclavian pulse, or only the left subclavian pulse, are weaker than the right an isthmus stenosis of the aorta must be considered. This is usually not difficult to diagnose, especially when the blood pressure in the left arm and lower extremities is lower than in the right arm. Inequality in the strength of the radial pulses is frequent in syphilitic aortitis. Such a difference should be traced to the brachial and subclavian artery. Differences at the wrist alone may be due to differences in the size of the radials or to an anomalous position of the artery. If the right subclavian and carotid are both weaker, then the innominate ostium is affected. All three ostia of the main arteries arising from the aortic arch may be involved, as in the following interesting case:

Case 2. This white male, aged 62 years, entered the hospital complaining of marked dyspnea and swelling of the ankles for eight months. He had lost considerable weight. He admitted a chancre many years ago.

On examination several striking cardiovascular findings were noted. There was a shaking of the frame with every systole of the heart, but the head was not affected. The radial, axillary and brachial pulses were absent on both sides. There was no pulsation in the right carotid. The left carotid presented a definite pulsation, with a distinctly palpable thrill which could be traced to its origin behind the head of the left clavicle. There was no thrill in the aortic area. There was also a loud rough systolic murmur over the left carotid. The femoral pulses were strong, of the water-hammer type, and the Duroziez sign was positive. There was a marked pulsation in the arteries of the toes, with a capillary pulse. The heart presented an aortic form with marked enlargement to the left. The transverse diameter was 7 inches. The aortic dullness was increased to 4 inches, and obtainable to the right of the sternum. There was a double murmur at the base. The heart rate was only 60. The blood pressure could not be obtained in either arm on account of the absence of pulsation. The pupils did not react to light. Wassermann was negative.

Fluoroscopic examination revealed a diffuse dilatation of the aortic arch, but no aneurysm. The heart was markedly enlarged.

The diagnosis was: Luetic aortitis with diffuse dilatation of the aortic arch; aortic regurgitation; occlusion of the ostium of the innominate and left subclavian arteries; stenosis of the ostium of the left carotid artery.

The patient did not react well to rest or digitalis, developed a heart block with a pulse of 40, and died 2 months after admission.

The autopsy confirmed the above diagnosis in full, and in addition revealed an anomalous origin of the

left vertebral artery direct from the aortic arch 2 mm. from the left subclavian artery. The intercostal arteries were markedly enlarged (collaterals). The ostium of the right coronary artery was almost entirely occluded. There was also severe atheromatosis of the aorta.

When the brachial pulse is weak the blood pressure is usually lower on that side. An absence of pulsation does not necessarily mean that no blood is flowing through the vessel. The causes of decreased pulsation in the large branches of the aorta in syphilitic aortitis are the following:

1. Stenosis of the mouth of the artery as part of the syphilitic aortitis,
2. thrombosis in an aneurysm or the artery near the mouth especially when there is an atherosclerosis,
3. deformity or compression of the ostium by pressure of an aneurysm,
4. rarely, an embolus from thrombi in an aneurysm.

Four years ago I saw a colored patient at the Cook County Hospital, who had no palpable pulse in the brachial or carotid arteries on either side. The findings were those of a diffuse syphilitic aortitis with dilatation of the arch of the aorta. There was no aortic regurgitation. The heart was of normal size. The Wassermann test was positive. This patient had frequent attacks of syncope which lasted for minutes. He also complained of cardiac pain on exertion. My diagnosis was a syphilitic aortitis with diffuse dilatation of the aortic arch, stenosis of the ostia of all three large branches of the aorta, and of the coronary ostia. The findings were confirmed at autopsy. The innominate ostium was only 2 mm. in diameter, the left carotid the same size, and the left subclavian entirely occluded.

A *sixth sign* of syphilitic aortitis is an *aneurysm of any portion of the aorta*, not infrequently the retro-cardiac portion, or of one of the large branches of the aorta. We have seen several cases of aneurysm of the abdominal aorta. At the Cook County Hospital I have seen eight cases of aneurysm of the innominate artery in the past five years. All were associated with the findings of a syphilitic aortitis. These cases are characterized by the development of a pulsating tumor above the right clavicle, with displacement and compression of the trachea. The superior vena cava may be compressed. The following cases are of interest:

Case 3. The patient was a 39 year old colored male. About six months ago he noticed a mass on the right

side of his neck. He developed dyspnea and edema of the feet. Then followed a paralysis of the left arm and leg. A pressure developed in the throat and an irritating metallic cough. The blood pressure was 158/110 in the right arm, 170/120 in the left. In the right supraclavicular fossa there was a mass with expansile pulsation and palpable thrill. The pupils did not react to light. The heart was moderately enlarged, and there were no murmurs. Fluoroscopic examination revealed a luetic aortitis with widening of the ascending aorta, and a large aneurysm of the innominate artery. The patient began to expectorate blood. The diagnosis was syphilitic aortitis without regurgitation, diffuse dilatation of the ascending aorta, large aneurysm of the innominate artery, compression of the trachea, and slow bleeding from the aneurysmal sac. These findings were confirmed at autopsy. The paralysis was due to embolism from a fragment of a thrombus in the aneurysmal sac in the innominate artery.

Case 4. This patient was a 21 year old colored male, who entered the hospital because of pain in the back and abdomen. This pain had been present for 3 weeks, and was very severe. It seemed to localize in the lower back and right side of the abdomen. The abdomen was markedly tender everywhere, especially in the region of the ascending colon. Chest and spine x-rays were negative. The patient went home and returned 3 months later, complaining of frontal headache. He had convulsions followed by coma. He was afebrile, the blood pressure 230 systolic and 200 diastolic. Cardiorenal disease was suspected. Spinal puncture revealed the fluid under increased pressure with a positive Pandy reaction, and cell count of 15. Wassermann and Kahn were negative. The blood urea was normal. Neither syphilis nor nephritis could be established. The patient had another convulsion, the temperature rose to 103. He died 4 months after the onset of symptoms, again complaining of severe abdominal pain.

The autopsy revealed a gumma of the abdominal aorta with formation of an aneurysm that perforated into the retroperitoneal tissue. There was a partial thrombotic occlusion of the superior mesenteric artery and rupture of the right renal artery, with infarction. There was a focal encephalomalacia in the right temporal lobe.

The other symptoms usually found in uncomplicated syphilitic aortitis are 1. pain, 2. cardiac failure, 3. dyspnea, 4. palpitation, 5. edema. These are not of diagnostic value unless a syphilitic aortitis can be demonstrated.

Angina pectoris is quite frequent with luetic aortitis. It is usually of a severe type and progressive. The pain is the result of slow narrowing of the coronary ostia. This leads to anoxemia of the heart muscle with accumulation of toxic waste products. At first the pain is associated with exertion, later it becomes very severe even

at rest. Another factor in the causation of the anoxemia is the lowering of the diastolic blood pressure when aortic regurgitation develops. A certain number of the patients have hypertension with cardiac hypertrophy. The great increase in the volume of the heart muscle associated with the marked hypertrophy causes a still greater demand for nourishment at the same time that the blood supply is being slowly reduced. Coronary thrombosis is not common in this group of patients. Most of them succumb to cardiac failure before the coronary sclerosis reaches a high grade.

The heart may reach a large size even in the absence of aortic regurgitation, and death from congestive heart failure is the rule. With left ventricular decompensation the patient develops attacks of dyspnea. Frequently these occur at night hence the paroxysmal nocturnal dyspnea. Few cases develop fibrillation. Failure with normal rhythm is the rule. The cardiac failure is progressive and usually causes death in six to eighteen months. Cheyne-Stokes breathing is very common. In obscure cardiac enlargement in patients over forty years of age syphilis should be considered. To make a definite diagnosis evidence of syphilitic aortitis must also be found.

THERAPY

Cardio-vascular syphilis can be prevented by the treatment of all syphilitic patients in the sero-negative primary stage. This requires an early diagnosis by dark field examination of secretion from the primary lesion or enlarged lymph nodes. At this early sero-negative stage a permanent cure can be attained in a very high percentage of infected individuals. Such a cure requires at least eighteen months of continuous therapy with arsphenamine and bismuth or mercury. Twenty doses of arsphenamine and twenty doses of bismuth salicylate in 40 to 50 weeks are needed to assure permanent noninfectiousness. Thirty injections of the arsenical and thirty to sixty injections of a bismuth compound in the first two years should be the therapeutic objective to prevent recurrence and late manifestations of syphilis. With such treatment syphilitic aortitis would be prevented, as well as other forms of latent syphilis. A "cure" would be attained in about 90% of patients with a primary lesion. In latent syphilis the length of time necessary for a cure is more than eighteen

months to two years. The maximum results are obtained with about twenty injections of arsphenamine combined with large amounts of heavy metal, the latter prolonged over long periods of time.

Wile, in a recent review of a large series of patients with cardiovascular syphilis, found that two-thirds of the patients with uncomplicated syphilitic aortitis had received no treatment prior to the onset of their cardiovascular symptoms. Eighty-six per cent. of the cases of aortic aneurysm had received no treatment for syphilis prior to the onset or detection of symptoms. *Practically none of the cases of syphilitic aortitis had received the present standard of anti-syphilitic treatment.*

The average length of time between infection and the development of cardiac symptoms is fifteen years, and aneurysm or aortic regurgitation required an average of twenty or more years. Patients with latent syphilis who have no symptoms, physical signs or x-ray findings of cardiovascular syphilis at the time of examination will require about ten years for this type of involvement to appear. In untreated latent syphilis about 20% may be expected to develop symptoms of cardiovascular syphilis. The above statements indicate the great necessity of intensive treatment of all patients with latent syphilis to prevent its most serious and fatal consequence, namely, syphilitic aortitis.

The treatment of patients with clinical evidence of cardiovascular syphilis is still an unsettled problem. The chief measure in the treatment of syphilitic aortitis is rest, more or less complete, according to the severity of the symptoms. Strain should be forbidden even in the mild cases. Overeating, excessive smoking, and the use of much liquor should be avoided. With cardiac enlargement, angina pectoris, aneurysm or aortic regurgitation the patient should remain quiet in bed, or in a reclining chair.

Angina pectoris and congestive heart failure are treated as for other causes. I wish to call attention to the great value of aminophyllin (given intravenously in doses of 4 to 7 grains in solution in about 10 cc. of water and injected slowly) in the treatment of the Cheyne-Stokes breathing of congestive heart failure. The result is usually very striking with great relief of the difficulty in breathing. This same treatment fre-

quently relieves the pain in severe attacks of angina pectoris or coronary thrombosis. Salysan given in 1 to 2 cc. dose intravenously is one of our most valuable diuretics, and at the same time is a useful mercurial antiluetic drug.

In the presence of congestive heart failure antiluetic therapy should be withheld until treatment of the failure has been successful. Hypnotics and narcotics may be necessary for insomnia and severe pain due to pressure by an aneurysm.

When the diagnosis of luetic aortitis has been established antiluetic therapy should be instituted at once, in the absence of congestive heart failure, serious renal or hepatic disease. Uncomplicated aortitis cases should receive potassium iodide in 10 to 20 grain doses three times daily for six to eight weeks. Mercury may be used by inunction, or intramuscularly (mercury salicylate $\frac{1}{2}$ to 1 grain once a week until 6 grains have been given). Then neoarsphenomine should be given once or twice weekly in doses from 0.3 to 0.6 gram until ten to fifteen injections have been used. *It should be avoided in angina pectoris, and given very cautiously in aortic regurgitation.* After one month the arsenic course should be repeated. Four or five complete courses of mercury or bismuth, iodides, and arsenic should be given over a period of two years. After a few months two more courses should follow. Large amounts of bismuth or mercury are more successful than arsphenamine in producing clinical and serologic negativity in latent syphilis. Very satisfactory results are obtained in a majority of cases, with decrease of the symptoms and cessation of the growth of the dilated aorta or aneurysm. In aortic regurgitation very little can be accomplished with specific therapy. The cardiac failure must be treated with rest, digitalis, and morphine as in rheumatic cases. For aneurysm a low blood pressure should be maintained by rest, limited diet, and plenty of sleep. Clotting in an aneurysmal sac cannot be influenced. When there is bleeding absolute rest under the influence of morphine is indicated.

55 East Washington Street.

WHY HE DID IT

Mother—Tommy, haven't I told you time and again not to play with that bad little Tutweiler boy?

Tommy—Yes, ma. I was only playing with him long enough to win his new marbles away from him.

CARDIAC EMBOLI

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CHICAGO

Virchow may justly be considered the father of the present conception of embolism. There were numerous workers in this field before him, but the true understanding of the cause and effect of embolism is the result of his doctrine, which is based on definite scientific, experimental and clinical research.

Before Virchow, it was thought that all intravascular blood clots formed in the places where they were originally discovered; while infarction was supposed to have been the result of blood coagulation within the capillaries.

That an embolus may migrate from a distant place and lodge somewhere along its route and cause obstruction was not even thought of. After Virchow, the entire idea of embolism changed.

With our present knowledge of effects and symptoms of embolism, a correct diagnosis of the condition can usually be made in the majority of cases. However, when we can discover no source of embolism, the true condition is either overlooked or misdiagnosed; especially is this true in cases which result from peripheral venous thrombosis without local manifestations. Then, not only is the diagnosis missed, but the prognosis will also be underestimated.

Embolism is a term applied to an obstruction of some portion of the vascular system, with an arrest of the circulation. The plug itself is known as embolus.

Emboli may be divided into:

1. *Cardiac*, when they are derived from the heart directly.
2. *Extracardiac*, when they are derived from a thrombosed vein. They travel along the venous circulation, enter the right side of the heart, and usually cause pulmonary embolism.
3. *Aseptic or Benign*. Such emboli are usually derived from an intracardiac thrombus, which forms in one or more of the heart chambers. Under certain circumstances, of which we shall speak later, small particles break off and enter either the systemic or the pulmonary system.

Read before the Northwest Branch, Chicago Medical Society, February 21, 1936.

4. *Septic or Infective.* These are derived from vegetations found on the mitral or aortic valves, or from a broken down valve itself, and are the result of acute or subacute bacterial endocarditis.

A whole vegetation or only parts of it, loaded with microorganism, may get loose and cause not only mechanical interference with the circulation, but will also be a source of secondary infection in the place where it lodges.

5. *Paradoxical or Crossed.* Occasionally emboli from the right side of the heart may enter into the left side of the heart, and then into the systemic circulation by way of a persistent foramen ovale. This will occur, particularly, when the pressure within the right auricle is greater than in the left.

Even coronary emboli have been known to have their origin from a thrombosed vein of a lower extremity.

The vessel which an embolus will obstruct is often a matter of chance, although mechanical factors may play an important role in determining its course. It is assumed that, in its migration, the embolus will follow the blood stream in a straighter route than along curves and angles. It is also easier for it to enter a larger size vessel than to force itself into a narrower one.

The fact that the right branch of the pulmonary artery is larger than the left, while the branch supplying the lower two lobes of the right lung is larger than the one supplying the upper lobe, may perhaps account for the fact that pulmonary infarcts are most commonly found in the lower right lobe of the lungs.

The same probably also accounts for cerebral emboli affecting mainly the left side, since it is easier for an embolus to enter the left common carotid artery, which is a direct branch of the arch of the aorta, than into the right common carotid, which is a branch of the innominate, it being a branch of the arch.

It is obvious that the smaller the embolus, the smaller will be the vessel which it will obstruct.

Generally, the symptoms and effects vary with the character and size of the emboli, the size of the obstructed blood vessels, and the functional importance of the parts involved. In addition to the symptoms resulting from mechanical interference with the circulation, septic emboli may

cause constitutional symptoms and suppuration with local abscess formation at the point of their lodgement.

Infarction results from occlusion of end arteries, as in the brain, spleen, retina, mesentery, etc., the infarct assuming the shape of the area included by the arterioles. Thus it will be either conical or wedge shaped. The color of an infarct depends on the height of the venous pressure in that area. Where it is high, as in the lungs, or in the intestines, the infarct is usually hemorrhagic in type, otherwise it is either anemic or mixed. When the tissue around an infarct remains alive, it will receive a supply of lymph and will therefore undergo "coagulation necrosis;" where this is impossible, as in the extremities, the process will be one of gangrene, either moist or dry.

When anastomosis of an artery is abundant, or when an embolus is so small as to obstruct only an arteriole or a capillary, the symptoms will be mild and of short duration, or they may be entirely absent. In mild degree of obstruction, or where the collateral circulation is established rapidly, death of the part will not ensue, although the nutrition will never return to normal in that part. The higher the type of specialized cells, as those of the brain cells or of the kidney tubules, the sooner will they die when deprived of nourishment.

The immediate effect of an embolus is an obstruction to the blood flow below the point of its lodgement, producing a local ischemia with distention and stretching of the vessel above the point of obstruction. This causes very sharp pain, especially when a larger vessel is obstructed and where there is no proper collateral circulation.

When an embolus only partly plugs a vessel, the onset is not as stormy, although a secondary thrombus may later close the entire lumen and produce severe symptoms in addition to the mild.

Individual Locations: Cerebral. It is estimated that about 25% of all emboli are cerebral, and that the left middle cerebral artery is affected in the majority of cases, causing right hemiplegia. When the affected blood vessel is small, the embolus will cause only localized paralysis with total or partial aphasia. Both conditions may improve in a very short time, although there is always some impairment of

function, and particularly the aphasia may be permanent. The improvement is due to the breaking up of the embolus into smaller particles, which are then swept on to unimportant areas.

Pulmonary. Emboli entering the pulmonary system are not as common as the systemic. They are derived either from the right heart, or they may be the result of extracardiac peripheral venous thrombi. The effect depends on the size of the arteries plugged. When the main trunk of the pulmonary artery or a large branch is involved, the pain in the precordium is excruciating, simulating coronary thrombosis, and the patient dies in a very short time as a result of "acute cor pulmonale" or acute dilatation of the right heart. A correct diagnosis is often very difficult.

"The clinical evidence of acute cor pulmonale, resulting from pulmonary embolism," say McGiven and White, "deserves consideration, because of the frequency and importance of the condition and of the common difficulty in diagnosis. The growing readiness of surgeons to undertake the operative procedure for the removal of the embolus from the pulmonary artery further emphasizes the importance of establishing a correct diagnosis.

"The symptoms and signs of extensive pulmonary embolism are variable, but predominating at first are those of shock—namely, collapse, pallor, sweating, apprehension, and a fall in blood pressure—to be followed by reaction to the infarction, itself—namely, fever and elevation of the pulse and respiratory rates. In none of our cases, did we find acute chest pain in absence of pleural involvement, but most of the patients complained of substernal oppression and suffocation. Respiratory distress was named in all cases."

A sense of suffocation was the most outstanding single symptom in my own cases, and the patients kept repeating that they were dying. In one case, phlebitis of the leg and in two cases, recent pelvic operations were considered to be the cause. All three patients died within thirty-six hours. Remission may occur when the vessels are not entirely plugged, and the patients may then recover.

The diagnosis, although very difficult, should be suspected when there is a sudden onset of respiratory distress with a sense of suffocation, following a recent operation, in the presence of phlebitis or some cardiac condition, and in women who recently had puerperal sepsis.

When smaller size branches are plugged, the symptoms usher in with a severe stitch in the

pleura, the result of pleural edema. Either the base, or the apex of the lung may be involved, although in the majority of cases, the emboli lodge in the lower lobe of the right lung. Part of the dark blood of the hemorrhagic infarct extravasates into the air passages and is expectorated. There is some moderate elevation of temperature, dullness on percussion and other signs and symptoms simulating bronchopneumonia. In fact, the condition is often attributed to an ordinary pleuropneumonia. A careful check of the heart, or the findings of other possible sources of emboli, will often furnish a clue to the actual condition.

Emboli of the extremities. Large emboli will obstruct important arteries. They usually lodge at the bifurcation of the main vessels, saddling across the fork and blocking both branches. A common place is in the femoral or in the popliteal arteries, or at the division of the brachials. The onset is very sudden with severe pain, often paroxysmal. The leg, especially about the foot and ankle, is cold, pale, mottled with bluish-red spots. The condition is often attributed to phlebitis, especially when the femoral artery is involved. The pulse may return in some parts where it was absent before, probably due to the disintegration of the clot.

When the radial artery or the dorsalis pedis are blocked, there is severe local pain and tenderness. Neuritis or rheumatism is often thought of, while the real condition may escape the examiner's attention. A careful search for the pulse, which will be found missing, will put the examiner on the right track.

In the kidney. An embolus in the renal artery causes severe pain in the back, resulting from the stretching of the capsule, hematuria soon following. When blood clots form, the symptoms may resemble renal colic.

Splenic vessels are frequently affected by emboli, causing infarction. There is sudden severe pain in the left hypochondrium and in the back, often aggravated by inspiration, which stimulates a left sided pleurisy. Occasionally a perisplenic friction rub may be detected, and the spleen may become enlarged and palpable. There are also chills and fever, not so much the result of the infarction itself, as of the associated endocarditis.

Embolism of the coronary artery, although

rare, may occur. The pain in the chest is very severe and may last twenty-four to forty-eight hours. Sudden death may occur, if a large coronary branch is plugged. If the patient survives, the blood pressure falls, the lungs become edematous and profound collapse follows, the heart sounds diminish and the heart rate becomes very slow. In other words, the condition simulates an attack of coronary thrombosis.

The mesenteric arteries. Usually the superior is involved in the majority of cases, affecting the lower part of the jejunum and ileum. The condition is always grave. The onset may be gradual, but is usually sudden, with severe abdominal pain and vomiting, which may be bloody and even fecal in character, suggesting general peritonitis or intestinal obstruction. Intestinal bleeding may follow. The temperature is usually subnormal, with pallor and signs of collapse. Such symptoms are always an indication for early surgery.

Infected emboli in smaller arteries, as in the nasal, will cause local inflammatory redness and swelling and also probable account for pain and tenderness in muscles and joints. In superficial arteries, the infected emboli will cause inflammatory reaction and formation of embolic abscesses.

In about 50% of the cases of bacterial endocarditis, skin lesions may be detected. They are embolic in nature and appear in showers. Repeated search will usually reveal them at one time or another. Thus, non-elevated petechial spots occur in the skin, the fundi of the eyes, conjunctival and buccal mucous membranes. A common location is the back of the neck and sides of the fingers and toes or about the ankles and below the knee joints. A more general distribution may occur. The petechial spots are about $\frac{1}{2}$ mm.—2 mm. in diameter, pale in the center and do not disappear on pressure. They should be differentiated from small angiomata, which we see in many patients and which are slightly elevated, cherry red in color and usually blanch on pressure.

Infected emboli may lodge in the spleen, kidneys, retinal vessel or elsewhere and cause infarcts.

"Splinter Hemorrhages," described by Blumer may occasionally be detected. They are very rare and measure about 4-5 mm. in length, and

are several mm. removed from the growing edge of the nail.

Aseptic Emboli. "Aseptic emboli" are of greater interest to us, since they frequently follow auricular fibrillation, a condition which is very common. Auricular fibrillation may be the result of arteriosclerosis, hypertension, degenerative myocarditis, infectious diseases, thyrotoxicosis, or of nervous origin and is a frequent complication of mitral stenosis.

The rheumatic patients are usually children or young adults for whom we can do a great deal and who, under proper management, live for many years.

We shall, therefore, center our attention on the last group—auricular fibrillation in association with mitral stenosis—especially since nearly half of the cases are in the scope of that particular group, and practically every physician has such patients under his care.

What are the embolic possibilities in that group of patients?

In mitral stenosis, the "aseptic emboli" are derived from the intracardiac thrombi, which are always present in the left auricle, particularly in the auricular appendage.

It is not entirely clear why such thrombi should form in the heart. One theory is that in mitral stenosis, the narrow A-V ostium causes a retardation and sluggishness of the blood flow from the left auricle into the left ventricle, thus resulting in partial stagnation of the blood. In other words, it resembles the old theory of gallstone formation. But while the theory may have some basis in the gall-bladder, the auricle is really not a pouch, but a channel. However, the theory cannot be entirely discarded, since the thrombi are usually found in the auricular appendages, which are partly pockets where the blood current is necessarily slower, thus giving rise to the possibility of clotting, just as in certain myocardial conditions thrombi will be found in the ventricular apices between the columnae carnae, where the circulation is also sluggish.

Another theory is the presence of local endocardial infection. Local endocarditis favors coagulation of the blood, which becomes adherent to the inflamed or raw surface of the endocardium. This theory again suggests the newer conception of gallstone formation.

Perhaps a combination of both conditions—the sluggish circulation, combined with a local inflammatory process, may be responsible for the formation of the thrombus.

At times, either the entire thrombus becomes detached, or a large part of it may break off and form a "ball thrombus." Lying loose in the auricle, it may completely plug the narrow A-V ostium and kill the patient almost instantaneously. Fortunately, ball thrombi are not very common.

In the majority of cases, only small particles break off and form emboli, which enter the arterial circulation and cause obstruction to the blood flow, below the point of their lodgement.

The circumstances leading to the splintering of the thrombus and formation of emboli may be explained on the following basis, in mitral stenosis, even under normal circumstances, the possibility of a piece breaking off is always present in an ever present thrombus. However, the probability is rather remote. What really is needed to crush the thrombus into small pieces, is a sudden shock, such as an unusually strong contraction of the heart. Such strong contraction will follow extrastoles, as a result of the long refractory period, or when the rate returns to normal following paroxysmal tachycardia, or when the auricles assume more active contractions following the abolition of auricular fibrillation.

It sounds paradoxical that, with improvement, the patient's condition may become worse, but this is a fact, which is being recognized by most authorities.

Shall we then permit the fibrillation to go on permanently? The answer is, that permanent auricular fibrillation as such very seldom disturbs or annoys the patient. He is hardly aware of it, after it has lasted for some time.

"Auricular fibrillation is not in itself necessarily a dangerous condition," says MacKenzie. "The danger arises from the rapid action of the ventricles and the small and imperfect beats. In the majority of cases, the danger can be obviated by the judicious use of digitalis."

Before the patient develops permanent auricular fibrillation, he usually goes through a period of paroxysmal auricular fibrillation of shorter or longer duration, and it is during the period of sudden changes of rhythm that the

patient is conscious and disturbed by his condition.

It is also in the state of sudden and frequent changes of rhythm that embolic accidents are likely to occur. If we could prevent temporary paroxysmal fibrillation, we could possibly also prevent cardiac emboli in many cases. Unfortunately, it is as hard to prevent the short paroxysms as it is hard to turn the paroxysmal attacks into a permanent fibrillation. Once the fibrillation is permanently established, the patient is certainly better off and should be left alone. It is obvious that we must avoid the use of such drugs, which tend to *cure* the patient of his fibrillation, if we wish to avoid embolic accidents.

DRUGS VS. EMBOLI

The drugs that I have in mind are digitalis and particularly quinidine.

What is the action of these drugs?

1. Digitalis: (a) Depresses the function of the pacemaker or the S-A node, and stimulates the vagus, which acts on the junctional tissue, hence (b) delays the conduction of impulses between the auricles and the ventricles and, therefore (c) slows the heart rate. The diastolic relaxation of the ventricles is longer: therefore, (d) improves the tone and strength of the heart.

2. Quinidine: (a) Slows the conduction in the auricular tissue itself; thereby slowing the rate of the circus movement. (b) Prolongs the refractory period in the auricular muscle. The advancing, circulating wave then running into a tissue, which is refractory, may and often does become completely abolished; the S-A node resumes the initiation of contractions, and normal rhythm is thus established. It is important to remember that in a large percentage of cases, the circus movement will only be lessened, but not entirely abolished, and the fibrillation will continue as before.

In auricular fibrillation, the auricles do not contract normally. They are in a state of paralysis and twitch or fibrillate perhaps 450 times per minute or more. A large number of small and weak contractions reach the ventricles which have to follow suit, hence, they beat very rapidly and irregularly and are thus overworked. By blocking such impulses, we cut down on the rate of the ventricles, hence giving them more strength. That is all we expect digitalis to do

for us. But *digitalis will not stop* the circus movement, that is the fibrillation itself.

Thus, there is only one thing that quinidine may at times accomplish, which *digitalis* will not, and that is, it may change the abnormal auricular rhythm to a normal one, which is undoubtedly beneficial, but by doing that, it may force out emboli into the circulation.

Says MacKenzie: "From all reports, it (quinidine) is proving itself to be a very potent drug, potent for both—for good and for evil, and it evidently requires great discrimination in its use" and "while it seems to have the power of restoring normal rhythm in a goodly proportion of cases, its use is not without danger. One source of danger was perfectly clear to me—the throwing out of fragments of clot, which may have formed in the auricle after the onset of auricular fibrillation."

"Embolism is especially apt to occur when the auricles resume their beating after they have been fibrillating, as in paroxysmal fibrillation or at the resumption of normal rhythm under quinidine." (Sir Thomas Lewis.)

"The emboli getting loose during fibrillation, or at a time of the return to normal rhythm which occurs either spontaneously, or as a result of quinidine therapy, which is often serious and sometimes fatal." (Paul White.)

At best, quinidine will cause the fibrillating auricles to resume normal contractions in some cases, but very rarely do the normal beats continue for some time. The fibrillation usually returns after either a very short time or perhaps after several months. The danger in inducing cardiac emboli is so great as a result of quinidine therapy, that one wonders whether such therapy should ever be undertaken.

Quinidine, undoubtedly, has its merits in some selected cases, but such are so few, that it is hardly worthwhile to employ it routinely.

CONTRAINDICATIONS TO THE USE OF QUINIDINE

1. It should not be used in cases where there is congestive and distressing heart failure.
2. Is not to be used in badly damaged hearts—myocardial degeneration and arteriosclerosis.
3. When there is a history of previous embolism.
4. When there is active acute or subacute bacterial endocarditis.
5. In the presence of fever.
6. Where there are multiple valve lesions.
7. In disordered conduction, like partial or complete heart block.
8. Where the fibrillation is of long standing.
9. In coronary diseases of the heart.

10. If the patient has not had a previous course of *digitalis*.

11. Should not be used in combination with *digitalis*.

12. Should not be administered, unless the patient is confined in a hospital where the action of the drug may be watched.

13. Is not to be used after one course of quinidine did not succeed in restoring normal rhythm.

Indications: 1. May be tried in paroxysmal auricular tachycardia to prevent the recurrence of an attack. The dose should be fractional.

2. May be used for symptomatic relief in auricular fibrillation, providing none of the factors enumerated under contraindications are present.

Treatment of Cardiac Emboli. It is not the intention of this paper to deal with the treatment of cardiac emboli. The treatment depends on the organs affected and the symptoms arising thereby. Attempts have been made to remove aseptic emboli surgically, when discovered in the peripheral vessels, and the results reported in a number of cases are rather gratifying.

Strömbeck of Sweden reports 327 operations of arterial embolectomy after the first accident with 19% of various grades of improvement, some patients remaining alive from 1 to 10 years, the survival period depending on the age of the patients, the condition of the heart, and on new embolic accidents.

Thus, surgical procedure will prove of value only in isolated cases; in the majority of cases it is of little practical value, since surgical procedure should be resorted to immediately after the embolic accidents occur, otherwise the reaction will not permit it. As a rule, the patients associate the sudden pain with an attack of neuritis or rheumatism and employ home remedies, thus killing valuable time. Some patients are usually very sick, and one wonders whether it is worth while to subject them to the hazards of an operation, especially since more emboli are bound to follow.

I feel that quinidine should seldom, if ever, be employed in auricular fibrillation, and when used for some reason, the dose should be fractional. One should always be prepared for a possible emergency with cardiac stimulants, in

case of respiratory distress following the use of the drug.

The drug has not proven of any value to me in paroxysmal auricular tachycardia. In ventricular extrasystoles of nervous origin, it has not accomplished more than what simple sedatives, like bromides, would. I have good reason to believe that it may be of some benefit in auricular extrasystoles.

Levine suggests the use of quinidine in ventricular tachycardia arising in association with acute coronary thrombosis, where digitalis not only fails to slow the rate, but may even cause it to be more rapid. In his opinion, "quinidine sulphate in almost all cases can restore the heart to a normal rhythm, but he adds: "It must be borne in mind that quinidine is a dangerous drug, but the complication now being considered is in itself critical, apart from the other aspects of coronary thrombosis." In other words, since there is nothing to lose, the drug should be tried out. Levine also suggests the routine use of quinidine for the first two weeks after the onset of the attack of coronary thrombosis, in order to prevent auricular fibrillation, which may be a forerunner to an attack of a more serious nature.

As to quinidine in auricular fibrillation, due to thyrotoxicosis, where it may do some good without much danger of embolism, one feels that removing the thyroid, or where this is impossible, the use of Lugol's solution or x-ray therapy is more logical. But if thyroidectomy does not abolish the fibrillation, one questions the advisability of resorting to the use of quinidine.

Discussing the use of quinidine in auricular fibrillation, Carr says: "I am compelled, because of the experience we have had with the drug, to issue a warning regarding its presumed harmlessness." He states that several of his patients died soon after the normal mechanism was restored, and he feels that some, if not all of these fatalities were due to the effect of quinidine. One of the patients was a woman, who was convalescing satisfactorily following thyroidectomy. Since the fibrillation continued, she was given quinidine: the normal rhythm was restored, but the patient died suddenly, two days later. Most of his patients "proceeded from fibrillation to normal rhythm through an intermediate process of flutter," as checked by the

Ekg. This point is interesting and perhaps very significant.

Digitalis is undoubtedly the drug of choice. However, even that drug is not without danger in auricular fibrillation, especially when used in large doses in order to stop the fibrillation.

"I have come to the conclusion," says Thomas MacKenzie, in speaking of digitalis deaths—"that the danger from digitalis occurs only in auricular fibrillation" and "the probability of its (embolic) occurrence makes me always somewhat anxious, when pushing the digitalis to restore the normal rhythm in *auricular flutter*."

From the above statements by MacKenzie and Carr, the conclusion is justified that the emboli form during the phase of auricular flutter which precedes the normal rhythm; and that they are forced into the circulation, after normal rhythm is established, that is when the auricles have regained their strength and can contract with greater force.

I have seen a number of patients improve rapidly on large doses of digitalis and die suddenly soon after the improvement, and I feel that rapid digitalization with massive doses is always a dangerous procedure and is rarely indicated. Experience has also taught me not to remove the edematous fluid too rapidly, thus avoiding circulatory collapse in some patients. Very little is gained by hurrying and it is best not to look for spectacular results in a short time. As a rule, the patient can wait a little longer. With gradual improvement, the possibility of serious accidents are usually minimized.

SUMMARY

1. Embolism will produce symptoms which simulate various other diseases, the real condition often being overlooked.

2. The possibility of embolism should always be suspected in the presence of heart disease, especially when there is an associated auricular fibrillation, when there was a recent operation, in the presence of phlebitis, puerperal sepsis or following quinidine medication.

3. Contraindications to the use of quinidine are numerous, while the indications are only few.

4. Quinidine, when used in auricular fibrillation to restore normal rhythm, will often cause embolism, hence, it must be used very cautiously and under careful supervision.

5. Auricular flutter preceding the normal rhythm may be the real cause of emboli formation.

6. It is best not to try to *cure* the patients of auricular fibrillation by employing drugs, especially when the condition is of long standing.

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PULMONARY TULAREMIA

Report of a case with necropsy

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The increased incidence of the diagnosis of pulmonary tularemia, either primary or as clinical manifestation of one of the commonly accepted four forms of human tularemia, is awakening new interest. Few cases have been reported with autopsy, and still fewer with histopathological studies which have pointed to a specific pathology for this disease. The following case is of interest both because it demonstrates the difficulty in diagnosing the pulmonary form of the disease and also brings more evidence to prove that pulmonary tularemia has characteristic pathological changes.

F. E., a male patient, aged 56, was admitted to the Cook County Hospital November 30, 1934. At this time he complained of malaise, chills, somnolence and a cough, all of ten days duration. The cough was productive of a gray green sputum occasionally streaked with red blood. An outside physician diagnosed his condition as lobar pneumonia and sent the patient to the hospital.

The family history and past history were essentially negative. For years, however, he had been a heavy user of strong drinks, tobacco and coffee.

On admission his temperature was normal, pulse 96, and respirations 26. The blood pressure was 90/60.

The principal physical findings were in the right and left lung and chest. There were crepitant rales over the right lower lung posteriorly. There were also whispered pectoriloquy, increased fremitus and dullness on percussion over this region. There were occasional crepitant rales over the whole of the left lung. There was a small excavation on the posterior surface of the middle finger of the left hand. This was about 1 by 1 cm. and appeared as if the superficial epithelium (stratum corneum) had desquamated. The base was clean and pink and had no discharge. The edges were irregular. Other physical findings included several carious teeth and pyorrhea alveolaris.

The white blood count on admission was 9,950. Hemoglobin was 90. The differential blood count showed 72% neutrophils, 27% lymphocytes and one monocyte. The urine showed a trace of albumin. Microscopic examination of the urine showed an occasional white blood cell in each high powered field. Stools were negative for blood, pus, and mucus.

Further questioning of the patient brought out the fact that he was a butcher. He had cut his finger while working but the wound had healed uneventfully. During the course of his work, presumably while the lesion was open he had dressed some rabbits.

Because of the predominant lung findings a provisional diagnosis of resolving lobar pneumonia was made, but because of the occupational history tularemia was to be ruled out.

Agglutination tests for tularemia on 11-30-34 and 12-7-34 were negative. The Widal test was also negative as were agglutinations for *B. Melitensis*, and porcine and bovine abortus. Both the Wassermann and Kahn tests were negative.

Although the temperature was normal on admission it rose to 103(M) by eight P. M. It continued to run a septic course for three days and slowly returned to normal on 12-6-34. On 12-3-24 the breath sounds over the right lower lung became rather distant and indistinct. The temperature rose to 105 again on 12-7-34 and ran a septic course until 12-10-34. At this time he suddenly became very dyspneic and cyanotic, the pulse became imperceptible and he expired. The white blood count rose to 12,900 on the third day after admission but there were no other changes in the laboratory findings.

Autopsy was done by Dr. P. J. Melnick. External examination revealed a strongly built fairly nourished white male. The lips and finger nails were slightly cyanotic. The lower pole of the spleen was at the tenth rib in the mid axillary line. The liver (lower border) was 4 cm. below the xiphoid and 1 cm. below the right costal margin. The right pleural cavity contained 500 c.c. of a blood tinted fluid mixed with flakes of fibrin. The left contained 50 c.c. of slightly cloudy brown fluid. Pericardial sac contained 50 c.c. of slightly cloudy straw colored fluid. The heart weighed 390 grams. The myocardium was a dark red brown, soft and friable. The coronary arteries contained numerous hyaline plaques and there were numerous hyaline plaques in the pars ascendens and descendens of the aorta.

The right lung showed a deeply injected pleura covered with yellow gray fibrin. The upper and lower lobes were subcrepitant to noncrepitant. In the upper and lower lobe there were multiple, deep purple red and granular areas of consolidation which were irregular and contained light gray soft centers. The largest of these areas which measured 20 by 25 mm. in diameter and was found in the mid portion of the upper lobe was centrally liquified with a cavity 8 mm. in diameter. The cavity was filled by brownish pus. In addition to the irregular areas of consolidation the right lower lobe revealed several wedge shaped, firm, dark red subpleural nodes. The branches of the pulmonary artery leading to these nodes were occluded by dark red, soft, blood clots.

The spleen weighed 185 grams. The pulp was deep purple red and soft. Six cm. from the pylorus of the stomach there was a 15 by 20 mm. oval defect in the mucosa with smooth terraced edges and a smooth light gray floor. Liver weighed 2,130 grams. It was soft and purple brown. The markings were indistinct. Pancreas weighed 90 grams. It was firm, lobulated and light yellow gray. The mucosa of the small intestine was light yellow gray. The large intestine was similar. The cortex of the adrenals was narrow and bright yellow. Kidneys together weighed 390 grams. They were firm. The surface was purple brown and had fetal lobulations. On the cut surface the cortex was 6 mm. The markings were indistinct. The mucosa of the renal pelvis was pale gray. The inferior vena cava was occluded by a moderately firm, friable dark purple blood clot.

Microscopic findings. In the section of the right lung there are large irregular areas in which the alveoli are filled by an exudate which consists of fibrin, mononuclear cells and erythrocytes. In places the exudate is necrotic and the necrosis also involves the alveolar cells. About the necrotic area the alveoli are dilated and the alveolar capillaries are engorged with blood. Near the necrotic areas the branches of the pulmonary artery show a marked proliferation of the intima which is cellular with many mononuclear cells and newly formed capillaries. The walls of the bronchi are infiltrated by lymphocytes and plasma cells. In addition to the large areas of necrosis there are many smaller areas in which the retrogressive changes are more or less advanced. About the foci of early necrosis there are recent extravasations of blood in and between the alveoli and in the interlobular septa. Sections of the lung stained with Pappenheim—Unna, Gram—Weigert and Nile Blue Sulfate stains did not reveal any of the organisms. In a section of a slightly enlarged lymph node from the pulmonary hilus the sinuses are much dilated and filled with swollen and proliferated endothelial cells.

Post mortem agglutination test for Tularemia was positive on a sample of blood in dilution of 1/160.

The anatomic diagnosis was: Necrotizing bronchopneumonia of the right upper pulmonary lobe (Tularemia). Thrombosis of the inferior vena cava. Emboli in both main branches of the pulmonary artery. Hem-

orrhagic infarcts in the right lower pulmonary lobe. Very marked septic softening of the spleen. Cloudy swelling of the liver, kidneys and myocardium. Catarrhal cystitis. Chronic peptic ulcer of the stomach.

Comment. It is evident from this case that the typical ulcerative lesion of tularemia associated with regional lymphadenopathy need not necessarily be part of the clinical picture. Whether the lesion described on the finger in this case is an atypical ulcer of tularemia or whether it was merely a portal of entry for the organism or whether it played no part in the disease is a matter of conjecture. If one assumes either of the latter two premises one may say that the lesion was primary in the lung.

The absence of the typical external lesion forces one to depend upon laboratory tests for making the diagnosis. Ordinarily the agglutination test is positive in the early stages of the disease but it is to be noted that it may take some time to develop.¹ In the present instance the test was not positive until the time of the patient's death. One case is on record of tularemia, proved at autopsy and by animal inoculation where the agglutination test never was positive.²

The histopathology described here reaffirms the characteristic findings of endothelial proliferation in the small arteries of the lung, first described by Permer and Weil³ and later described by Francis and others.⁴

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THE ETIOLOGICAL RELATIONSHIP OF AMIDOPYRINE TO AGRANULOCYTOSIS

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Since 1931 when Watkins suggested the possible etiological significance of amidopyrine or its derivatives, many reports have appeared in the United States, Denmark, Sweden, Norway, Holland, and Germany accusing this drug. Among those who have described the disease associated with a history of amidopyrine-taking are Roberts and Kracke, Kracke and Parker, Madison and Squier, Randall, Hoffman, Butt and Hickey, Holten, Nielsen, and Transbol, Seeman, Fitz Hugh, Videbeck, Deversy, de Vries,

Jorgenson, Costen, Barfred, Zinniger, Andersen, Laren, Zinberg, Katzenstein and Wice, Benjamin and Biederman, Groen and Gelderman, Corelli, Knudson, Moltke, Johnson, Fisher, Sturgis, Zontscheff, Bock, Niekau, Naegeli, and Plum. However, the cases reported by the majority of these authors lack convincing evidence. Many of the patients had taken amidopyrine or its allied products for several years with impunity and suddenly developed the disease without apparent reason, and a substantial number developed the syndrome before amidopyrine medication was begun. Still, the very few cases of proved idiosyncrasy to amidopyrine illustrate its ability to produce the disease. Such cases are reported by Madison and Squier, Plum, Zontscheff, Bock, Niekau, and Sturgis. In these, the patients after recovery from their initial attack promptly developed leucopenia and neutropenia with typical symptoms of the disease after ingestion of the drug, and when the medication was discontinued the attacks ceased.

Amidopyrine may also produce other manifestations of idiosyncrasy, and then with an equal degree of rarity. Edema of the eyelids, of the cheeks and lips, blotches over the forehead, backs of hands, malaise (Unger), scrotal urticaria and genital edema (Crohn), and exacerbation of fixed eruptions have been described. In such allergic patients the patch, intracutaneous, and scratch tests have been found positive for amidopyrine (Meredith).

"If this (agranulocytosis) be an idiosyncrasy," writes Watkins, "it must be exceedingly rare, for enormous numbers of people use the drugs without known untoward reaction." The annual consumption of amidopyrine is prodigious. According to the Prescription Ingredient Survey of 1933 seven million prescriptions containing amidopyrine were written by United States physicians. A much vaster amount is sold over drug counters, and dispersed in hospitals. Yet the incidence of agranulocytosis is about 1 per 325,000 of population or approximately 385 annually. Were amidopyrine a cardinal etiologic agent the incidence of the disease would be much greater.

Some recent observations in this regard are noteworthy. In his study of 22 patients with agranulocytosis Jackson found 44% never to have taken any drugs whatsoever, while only

26% gave a history of amidopyrine medication. Naegeli observed 23 cases of agranulocytosis 21 of whom had not taken amidopyrine. The physician encounters a great number of patients suffering from this syndrome who deny having taken at a previous time any questionable medicament. It is significant to note that three of Jackson's cases were given amidopyrine during the height of the attack and one died and two recovered. Limarzi and Murphy report a similar study of a patient given 370 grains of amidopyrine during her 4th attack of agranulocytosis and with recovery.

Many clinicians employing amidopyrine extensively have failed to observe its agranulocytosis-producing tendencies. Hoyne, who has used amidopyrine in the therapy of measles since 1929 at the Municipal Contagious Disease Hospital, and Cook County Contagious Disease Hospital, has not seen the disease in his measles patients. Custer reports that at the Philadelphia General Hospital having a year's admission of 29,488 the approximate consumption of amidopyrine during 1934 was 120,000 tablets; no agranulocytosis has been observed in 1,926 autopsies performed during the year. Nor has Markson encountered any at the Arthritic Clinic of Northwestern University Medical School where the drug is administered generously. At Cook County Hospital amidopyrine-caused agranulocytosis is of the greatest rarity. At several psychopathic institutions in the United States where the drug is consumed freely the disease has not occurred. Many German clinicians, amongst whom are Werner Schultz, Naegeli, Schilling, Schittenhelm, Dennig, Veil, Kissling, and Neergaard, also feel that there is no occasion to discredit amidopyrine.

The experimental attempts to produce the Schultz syndrome with amidopyrine in animals have been disappointing. The rabbits of Miller, the guinea pigs and white mice of Markson, the rabbits of Kracke, the rabbits of Schilling, the rabbits of Kunde, Herwick, Learner, and Sternback, the guinea pigs, rabbits and monkeys of Stenn, and those used by many other investigators, have failed to show an agranulocytic blood picture after administration of amidopyrine and its allied products by various routes, in minimal and huge doses, under vary-

ing conditions, and for periods of time varying from a week to eight months.

With this evidence our present unfavorable attitude toward the use of so valuable an antipyretic and analgesic and so excellent a therapeutic agent in measles lacks adequate basis, and the ban that some hospitals have applied to its use is apparently unjustified. Amidopyrine is to be no more condemned than arsphenamine, bismuth, gold, mercury and silver, all of which may act adversely and be causative agents of agranulocytosis as well as many other disease states. Shall we restrict the use of the arsenicals because they may produce aplastic anemia, or bismuth because of thrombocytopenia that may complicate its administration? Like these other drugs, amidopyrine is to be regarded as a very useful medicament but also as one to which a rare patient may be sensitive.

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BLACK WIDOW SPIDER POISONING

Report of Four Cases

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The black widow spider is common in certain localities, and is extremely poisonous. It looks like an ordinary spider, but is black. It is also called "hour-glass or shoe-button spider." The legs are of the same length as those of an ordinary spider of comparable size.

Three or four hours after a person has been bitten, a pustular eruption develops, with three or four pustules containing a watery fluid. The pustules increase in size and sometimes become as large as peas. Severe pain at the site of the bite spreads all over the body, reaching its maximum about an hour after the bite. Generalized muscle spasm and a boardlike rigidity of the

abdominal wall are present sometimes. Patient sweats profusely, is restless and anxious; sometimes spasmodic twitching of the muscles of the extremities is present. The affected area becomes swollen and edematous. The edema of the skin resembles that of renal or cardiac dropsy. If the bite is on the hand, this hand will appear twice as large as the unaffected hand; the neighboring glands become enlarged, and there will be an enlargement of the glands of the whole arm, and some of the glands of the neck and maxillary region. There is sometimes general malaise with nausea and vomiting, and the patient feels ill and slightly feverish. The pain becomes severe, traveling upward along the nerves, and the arm becomes so heavy that the patient is compelled to hold it with his unaffected hand. There were 380 cases reported with 17 deaths in 18 states. Most of the victims have been males.

Treatment. Hot baths or hot applications are helpful. I got good results with hot applications of saturated magnesium sulphate solution. Some cases required morphine for the pain. Proper elimination and the administration of large quantities of fluids are essential. The intravenous injection of 10% magnesium sulphate solution is helpful. The administration of convalescent serum acts almost as specific. Bogen has performed spinal puncture in a few cases with striking immediate relief. Browning treated patients with nitroglycerin with considerable relief.

REPORT OF CASES

Case 1. F. R., a man aged 31, retired at 9:30 P. M. in his usual good health. About four o'clock next morning he was awakened by severe pain over the fifth metacarpal bone of the left hand. The hand was swollen, and by 7 o'clock was nearly twice the size of the right hand. I saw the man at 9 A. M.; he was restless and looked toxic. On the affected area were three pustular eruptions containing a watery fluid. I painted the area with tincture iodine, gave the patient calomel and magnesium sulphate and applied hot saturated solution of magnesium sulphate to the affected area. At 4 P. M. he was feeling worse; the whole arm was swollen and a streak appeared traveling upward. The patient was very toxic with slight elevation of temperature and rapid pulse. He looked so toxic that I feared he would die in spite of all I could do. I saw the patient at 9 A. M. next day. He complained of severe headache and severe pain at the affected area; his temperature was 101° F. I gave him morphine for the pain and 10 cc of 10% solution magnesium sulphate intravenously, and ordered the hot application of mag-

nesium sulphate to the affected area hourly. Next day the patient improved. On the fourth day he was much better and asked for food, the swelling disappearing very rapidly, and on the eighth day the patient completely recovered.

Case 2. C. H., woman, aged 44, who had always had good health, woke up during the night with severe pain in the right cheek. I saw her about 7 A. M., she was in agony and tossed about the bed, complaining of severe pain and headache; she was toxic, the right side of her face was red, hot and swollen and the condition resembled erysipelas. The right eye was swollen, and the patient could hardly open her mouth. I thought at first that she had toothache, but discovered that she had been bitten by a black spider. She vomited several times during the day. I gave patient immediately $\frac{1}{2}$ gr. morphine and applied the hot magnesium sulphate solution every hour. The next day patient was delirious, had high fever and the swelling extended to the ear and neck; she was very toxic. The patient looked worse at 6 P. M. when I gave her 10 cc of 10% magnesium sulphate solution intravenously. During the night she developed diarrhea. The next day she felt better; there was marked improvement in her condition, the swelling disappearing from her face rapidly and by the ninth day she was up and around practically recovered completely.

Case 3. A. D., a man, aged 63, early in the morning was awakened by severe pain in his penis. I saw the man about 11 A. M.; he was toxic, complaining of severe pain and swelling of the penis and testicles; the penis measured 4 inches in length, about 2 inches in diameter, the testicles were palpable, and the condition resembled hydrocele. I gave him morphine for his pain and magnesium sulphate intravenously. The next day the patient was worse, his penis was twisted and edematous and measured $6\frac{1}{2}$ inches in length and about 3 inches in diameter; he was very toxic. I gave him 10 cc of magnesium sulphate intravenously and 25 cc of convalescent serum intramuscularly. The next day patient was improving very rapidly, swelling was diminishing and by the sixth day penis and testicles were about normal size. The patient recovered completely by the ninth day.

Case 4. S. G., a man, aged 36, who had previously enjoyed good health, was bitten by a black spider in the leg below the knee. He did not pay much attention but one hour after he was bitten he noticed pain and swelling in the right leg. The pain became gradually worse which compelled him to go to bed. I saw the man eight hours after he was bitten; he was a pretty sick man and was in toxic state. His leg had the appearance of renal or cardiac dropsy. The pain was severe by this time and travelling upwards; he was very restless. The next day the patient was worse, very toxic, with swelling of the knee joint, he was unable to move his leg. I gave him morphine, and placed his leg high with hot applications of magnesium sulphate every hour, also 10% solution of magnesium sulphate intravenously. The next day there was no improvement in his condition, I gave him 25 cc of convalescent serum and the following day I noticed marked improvement in

his condition. He was improving very rapidly and by the tenth day he was up and around completely recovered.

Comment. The magnesium sulphate apparently relieves the pain, reduces the swelling and prevents the progress of the disease. The convalescent serum, however, acts as a specific in these cases. Gray states he got good results with convalescent serum. In none of the cases were bacteria found in blood or serum, and examination of the urine was negative. Blood counts revealed a slight increase in leukocytes, about 8,000 or 9,000.

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RESULTS IN OPERATION FOR INGROWN TOENAIL

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In a previous communication¹ published in one of the journals and since then transcribed in Christopher's Textbook on "Minor Surgery," the author has described a simple surgical procedure for relief of ingrown toenail, associated with a small group of cases operated on in the Mandel Clinic of the Michael Reese Hospital. Decision as to the efficacy of this operation must be based upon four factors: simplicity of technic; absence of incapacitation or loss of time; absence of complications; and permanency of results. It might be mentioned, of course, that prophylactic measures should be considered of precedent importance, as in any medical condition. Because of the relatively simple technic and minimum amount of surgical trauma involved in this procedure, it is unquestioned that the first three factors are well fulfilled in this operation. As to permanency of results, one might state that it is commonly admitted and frequently found that there is a marked tendency for recurrence of ingrown toenail, after operation.

In order to investigate this latter factor, the author was prompted to operate on a larger series of cases and observe them over a longer period of time. A group of thirty-one patients was operated on, including both clinic and private cases. After a period of eighteen months, it was possible to again make contact with only

twenty of these patients. A simple questionnaire as to results of the operation, performed eighteen months previously, brought forth the following information:

Result 18 months after operation	Number of cases	Percentage of observed cases
Cured	13	65
Improved	4	20
No improvement (recurrence)...	3	15
Cases observed	20	
Cases lost contact with.....	11	
Total cases operated on in this series	31	

As to the eleven cases which did not return for examination eighteen months after the operation, whether one might consider them as cured but not desirous of troubling themselves to return purely for the sake of scientific inquiry, or as not cured and having decided that permanent relief was futile, depends upon one's degree of optimism. For obvious reasons, these cases were not included in the determination of percentage results.

The operative technic employed may be briefly described as follows, as quoted from Christopher's Minor Surgery:²

1. A tourniquet, which serves both to make the field bloodless and act as a partial nerve-block, is applied at the base of the toe. A small piece of rubber tubing serves best for this purpose.
2. Sterilization of the field is obtained by iodine and alcohol.
3. Anesthesia is produced by injection of 0.5% procaine at the base of the big toe down to the bone on both sides, thus blocking off the nerves to the part to be operated on.
4. A small incision is made in the soft tissue of the nail fold and eponychium on a line with the incision to be made in the nail, and extending back to the matrix.
5. Chiefly by blunt dissection, the soft tissue is separated from the ingrowing piece of nail until the lateral margin of the nail is reached. This piece of tissue, which in methods previously described was removed, is retracted and preserved.
6. With small pointed scissors the nail is cut about $\frac{1}{8}$ to $\frac{1}{4}$ inch from the visible margin, the incision extending back to the end of the matrix.
7. The loose piece of nail is grasped with forceps and, by gradual traction and separation from the nail bed, may be removed in one piece.
8. With a small curet the matrix and nail bed are curetted back to the innermost corner, so as to prevent recurrence of nail growth.
9. The wound is then treated with mercurochrome and packed with a small piece of sterile petrolatum gauze. The tourniquet is removed and the soft tissue replaced.
10. Daily dressings for a few days are necessary, after which the toe may be dressed every two or three days. In cases in which there is marked swelling and sup-

¹Work done at Department of Surgery, Mandel Clinic, Michael Reese Hospital.

puration it is advisable to soak the foot in hot water containing boric acid for several days before the operation. Pain during the first night after the operation may be relieved by a barbitol preparation, although this is usually not necessary if the technic described is employed. Throughout the postoperative course the toe maintains a practically normal appearance. A small incision in the eponychium is the only visible evidence of the operation, whereas by the old method there is left a raw, open surface, usually infected. The swollen, overgrown tissue (demonstrated as chronic inflammatory and not true hypertrophy by microscopic section) returns to normal size and soon has the same appearance as the tissue on the unaffected side. With proper care infection should not be present, and there is little danger of extension from previous infection as no wide blood channels are opened. Within reason, the patient may walk on the foot the same day as operated on.

Why some ingrown nails will return though others operated on by exactly the same technic do not, is difficult to explain, unless it is assumed that the patient has again subjected himself to the same causative factors that brought on the original condition. We are all aware of the frequency of this common condition. This is evidenced by the rapidity with which the number of cases multiply in clinic work when one displays interest in this particular condition. However, only the long-suffering patient can testify as to the pain and incapacitation involved in the untreated case. This is evidenced by his usual willingness to be operated on.

It is quite possible that one of the other operative procedures has a higher percentage of "permanent cures" than the one here described. If so, recognition should be made of this fact so as to eliminate as far as possible the patients' inconvenience at being operated on again and the surgeon's chagrin in seeing his patient back with complete recurrence of the condition.

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TUMORS OF THE PANCREAS

Tumors of the pancreas push forward from the depths of the epigastric and upper part of the umbilical areas, and present themselves as deeply-seated, vaguely-felt masses on palpation. They are best made out by examination under an anesthetic, move little on respiration, and often transmit a non-expansile pulsation.—"Medical Aphorisms," in *Radiological Review*, Jan., 1935.

SIDE REACTIONS ENCOUNTERED IN THE USE OF ESTROGENIC HORMONE THERAPY

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Estrogenic hormone therapy has assumed considerable importance in gynecology within the last decade. What particular forms will survive the present experimental stage remain to be seen. This paper considers some experiences encountered in the administration of a certain estrogenic hormone in oil. The following case histories elucidate the rather unusual reactionary sequelae:

Case 1: Miss H., aged 29 years, white, complained of irregular menses with lessening of the menstrual flow following instrumentation and vaginal treatments, nine months previous. The patient stated that she would flow for two days quite normally, stop a day, and soil a napkin for several days following. On administration of one-half an ampoule of theelin in oil, 1000 U., the patient described a painful itching sensation over the sites of the previous injections in the gluteal region. Other than this, no subjective nor objective complaint existed. Her menstrual history soon took on a normal character, and she was quite contented.

Comment: The subjective complaint of itching was lightly considered in as far as this was the first patient that manifested such a condition, and likewise as a definite benefit was experienced from the injection. However, a note was recorded to this effect, and other patients receiving theelin medication in my office were questioned.

Case 2: Mrs. H., aged 45 years, white, presented herself because of peripheral neuritis following massive doses of self-administered dinitrophenol tablets. During the course of history taking, considerable stress was laid upon recent symptoms associated with the menses. She would have splitting migraine headaches and attacks of nausea, followed by vomiting. Considering these complaints associated with beginning menopausal symptoms, theelin medication was instituted at the earliest opportunity. Again, a troublesome itching over the site of the injection was experienced. This patient stated that at times she felt as though she could tear the segment of skin out with her finger-nails. Her subjective complaints of vomiting and headaches became decidedly improved. In fact, she stated that other than a slight tendency to nausea, she felt perfectly well.

Comment: This patient was receiving treatment at the same time as the first case. But since her relief was so gratifying, we discounted the side reaction considerably.

Case 3: Mrs. M., aged 36 years, white, had had a very bad vaginal discharge, which proved negative for all specific diseases. Examinations revealed a very badly lacerated cervix with marked erosion. The cervix looked suspiciously malignant, and a trachelorrhaphy was performed. The laboratory report returned a pathological diagnosis of spurious precancerous tissue. Convalescence was rapid. However, several months later, the patient complained of menstrual disturbance, characterized first by profuse bleeding for ten days, then bleeding bimonthly. Finally, her flow lessened and an irregularity of menstruation set in, typified by a menorrhagia for two days, then stopping for thirty-six hours, followed by spotting for several days. Theelin medication was again considered in order, and injection begun. The first half ampoule had no deleterious effect worth reporting. On her second injection, the patient was aware of a slight general urticaria and itching over the area of injection. She neglected to report these symptoms on her subsequent visit. Consequently, a third ampoule was given. We talked in the office for a short time, and as it was my last appointment for the evening, departed together, walking several blocks down the street before parting company. The patient went directly to a restaurant for tea. But at that moment, she subsequently described a definite anaphylactic reaction. She had difficulty in breathing, felt extremely cold, yet perspired profusely. She said she was afraid to move, even to sip the tea before her, and began to experience an itching over her entire body. After several minutes she drank her tea and was able to depart for home. The next day, she had a typical urticaria over her face and body, and was unable to leave her residence for several days.

Comment: This patient was relieved with neosynephrin hydrochloride and alkalization. Her menses became decidedly better and at the last visit, she described her condition as excellent.

On reporting these cases before a hospital medical group, Dr. K. cited a similar case. He stated that following the injection of theelin in oil, 1000 U., his patient experienced a characteristic anaphylactic reaction requiring an ampoule of adrenalin before recovering.

Case 4: Miss J., a niece to Mrs. M., aged 23 years, white, had been complaining of a hypomenorrhea similar to the above described cases, and theelin medication was instituted. These cases were running concomitantly and unknown to each other. This young lady broke out with a severe scaling, itching dermatitis, especially disconcerting because of its invasion of her face and neck. Several days later, she complained of submaxillary swelling associated with pain. On examination, all the salivary and cervical glands were enlarged and tender, especially both parotids. There was no apparent pathology in either nose or throat, nor any subjective complaint of a cold. The condition lasted approximately ten days, and became amenable to heat, alkalization and ephedrine medication.

Discussion: The above cases are reported with the thought of emphasizing that theelin in oil must be administered with discretion; that, in spite of the claims of the manufacturers, side reactions occur, some quite disconcerting to the patient.

These reactions were made known to the manufacturers, and the oil contents of the ampoule suggested as the offending agents. It is conceivable that the patients were susceptible to the peanut or sesame oil diluent. However, a scratch test for these two oils was done on the patients with negative results.

Conclusions: Five cases of side reaction varying from simple local urticaria to generalized dermatitis, parotitis, and anaphylactic shock, following intragluteal injection of 1 c.c. ampoule of theelin in oil, 1000 international units per c.c., is herewith reported.

Evidence is presented to show that these reactions were not attributable to the oil diluents.

Theelin in oil intragluteally administered has a beneficial effect upon certain forms of menstrual disturbances.

No definite evidence can be submitted to account for the reactions described, other than the theelin itself.

One must be aware that side reactions occur, and be prepared to meet the exigencies.

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FEW PHYSICIANS IN UNITED STATES CONGRESS

The interest of the average physician in the conduct of the political situation of the country reminds one of Mark Twain's remark about the weather. He said, "Everyone is criticizing it, but no one does anything about it." Medical men criticize conduct of local, state or national affairs, but if the present medical representation in Congress can be used as a criterion, the profession has almost entirely lost interest in politics.

Time was when doctors of medicine were not uncommon in the Congress of the United States. One of the ablest men who ever sat in the Senate was Joseph H. Gallinger, M. D., who represented New Hampshire in the House for four years, and in the Senate for over thirty years. No other physician ever reached the pinnacle of fame which was attained by Doctor Gallinger. He was not only one of the oldest men in point of service, but he was easily one of the most influential.

Since his day, with the exception of the senior Senator from the State of New York, no physician has long graced the halls of Congress. Senator Royal S. Copeland is the only representative of his profession in the Senate today, and he has but four confreres in the House of Representatives.

Senator Copeland, formerly of the medical faculty of the University of Michigan, and mayor of Ann Arbor, and later dean of New York Homeopathic-Flower Hospital Medical College, came into the public eye as the commissioner of health in the city of New York, a position he filled with unusual credit for five years. Doctor Copeland was looked upon as one of the most outstanding public health authorities in the country during his term of office, and he was rewarded for his splendid work by election to the Senate in 1923. Senator Copeland was reelected in 1929, and again in 1935, making him one of the "older brethren" of that august body.

He had as an associate from 1929 to 1935, former Governor Henry Drury Hatfield, M. D., of West Virginia, one of the most prominent surgeons in that State. Unfortunately, the Senator was not reelected, leaving Senator Copeland to carry the torch alone.

In the House of Representatives are to be found four medical Congressmen, three from the East and one from the Middle West. Dr. William L. Higgins of South Coventry, Connecticut, and a graduate of the University of the City of New York, 1890, represents the Second Connecticut District. He is a former president of the Connecticut State Medical Society; he served sixteen years in the General Assembly of his state, was secretary of state for four years, and was also a county commissioner and a selectman of Coventry. He was first elected to Congress in 1932.

The sole medical representative from the Corn Belt is William H. Larrabee, M. D., of Indiana, a graduate of the Indiana University School of Medicine, and a practitioner in New Palestine for thirty-three years. He belongs to the national, state, and county medical societies, is prominent in fraternal circles, and was formerly a member of the City Council, secretary of the County Board of Health, and a representative in the Indiana General Assembly. He is now serving his sixth year in Congress.

The State of New York has two physician-congressmen in the persons of Joseph L. Pfeiffer, M. D., F. A. C. S., of Brooklyn, and William I. Sirovich, M. D., F. A. C. S., of New York City.

Doctor Pfeiffer is a 1914 graduate of the Long Island College of Medicine, and is assistant surgeon to the Kings County and St. Catherine's hospitals. He recently sent to the Scientific Medical Institution of Emergency Attendance at Leningrad, Russia, at the request of the Soviet Government, his survey of appendicitis from the years 1920 to 1932, a total of 4,176 cases. Doctor Pfeiffer is prominently connected medically with various of the leading institutions in Brooklyn.

Doctor Sirovich, a graduate of the Columbia College of Physicians and Surgeons in 1906, has been superintendent of the Peoples' Hospital since 1917. He was first elected to the Seventieth Congress in 1927, and has been very active in the House since that time. The Doctor is not only a member of various medical organizations and civic groups, but has been an official arbitrator in labor disputes and is much interested in child welfare and copyright matters.

This list constitutes the medical representation in

Congress, but dentistry and pharmacy also have exponents in the Capitol.

The senior Senator from Minnesota, Henrik Shipstead, D.D.S., of Minneapolis, was graduated from the Northwestern University Dental School in 1903, and practiced his profession in Glenwood, Minnesota, until 1920, when he removed to Minneapolis. He still maintains an office in that city. The Senator was mayor of Glenwood for two terms, and was in the House of Representatives of his own state. He was first elected to the Senate in 1922, was reelected in 1928 and in 1934.

In the House of Representatives are two dentists, Frank Crowther, D.M.D., of Schenectady, New York, and John M. O'Connell, D.D.S., of Westerly, Rhode Island.

Doctor Crowther was graduated from Harvard Dental School in 1898, and practiced in Boston until 1901, when he removed to Perth Amboy, New Jersey. In 1912 he went to Schenectady. In New Jersey Doctor Crowther was a member of the House of Assembly, and of the Middlesex County tax board. He was at one time president of the Common Council of Schenectady, and was first elected to Congress in 1919. He has served continuously in the House since that time, now being a member of the Ways and Means Committee.

Doctor O'Connell was graduated from the Philadelphia Dental College (now Temple University Dental School) in 1905 as the valedictorian of his class. He has practiced in Westerly since his graduation, except for sixteen months when he was overseas with the Twelfth Division. The Doctor is prominent in the life of Westerly and in the various fraternal groups. He is now serving his second term in Congress.

The sole representative of pharmacy is William D. Thomas, Ph.G., of Hoosick Falls, New York. He was graduated from Union College in 1904, went to the home town at once and continues to be the proprietor of the Thomas Pharmacy in Hoosick Falls. He was town clerk for eight years, a member of the legislature for two years, county treasurer for six years, and has twice been elected to Congress.

Our Canadian medical friends take their politics far more seriously. In the Canadian Senate today there are seven medical men; two each from Ontario and New Brunswick, and one each from Quebec, Manitoba, and British Columbia.

In the Federal House of Commons more than 10 per cent of the members who have been guiding the destinies of Canada during the past five years have been physicians. Twenty-nine out of the total membership of 245 were followers of Aesculapius. Ontario sent 14 physicians out of 82 Representatives to the Federal House; Quebec had 9 out of 65; Saskatchewan 2 out of 21; Alberta 2 out of 7; Manitoba 1 out of 17; and Nova Scotia 1 out of 12.

In addition to this, the provinces of Ontario and Saskatchewan each had a medical man as lieutenant-governor. Be it understood, the chief executive officer of all Canadian provinces is the lieutenant-governor.

Incidentally, the Canadian profession goes into politics in rather a big way. In the provincial legislature of

Quebec out of ninety members eight are physicians; in Ontario there are six physicians among 112 members. In New Brunswick one-eighth of the legislature of forty-eight men are doctors. Nova Scotia has four medical members; Saskatchewan, four; British Columbia, three; Prince Edward Island, two; and Alberta, one.

Sixty-three physicians, representing various constituencies in the Dominion and serving at one time, indicate that the medical profession in Canada is determined that its representatives will be heard in the halls of legislation.—*California and Western Medicine*.

BENZEDRINE SULFATE AND ITS VALUE IN SPASM OF GASTRO-INTESTINAL TRACT

Abraham Myerson and Max Ritvo, Boston (Journal A. M. A., July 4, 1936), have found benzedrine sulfate, a sympathicomimetic drug, to be of great value in diminishing or abolishing spasm of the gastro-intestinal tract. This effect is observed when the spasm is due to whatever cause, such as unpleasant emotion, organic disease of the gastro-intestinal tract, and reflex spasm due to disease elsewhere in the body. This effect greatly facilitates the roentgen study of the gastro-intestinal tract, makes differential diagnosis between functional and organic spasm more certain and gives better visualization of organic lesions. The effect is almost immediate and is, on the whole, unattended with any side effects of importance. Clinically it has been found useful in relaxing spasm, such as is found in spastic colitis and pyloric spasm, and this has been of therapeutic benefit to the patient. The dosage for the average patient is 30 mg. of benzedrine sulfate orally; very stout patients may require 40 mg., while thin and very young individuals are given from 10 to 20 mg. Unpleasant effects may occur in a very small number of cases and consist of chilly sensations, flushing, diarrhea and general malaise. The authors have administered the drug to more than 200 patients and in only one instance was there a severe reaction. There may be sleeplessness or restlessness during the following night if the drug is administered late in the afternoon. The drug causes moderate rise in blood pressure (about 20 to 50 mg. of mercury) and therefore it should be used with caution in the presence of severe cardiac disease.

TOOTHACHES OF PRIMITIVE MAN*

That primitive peoples have perfect teeth and that civilized man has acquired his dental troubles because of eating refined foods are ideas which are frequently expounded by reputable scientists as well as by food faddists. There are two possible methods of testing the accuracy of such statements. One method is to study the skeletal remains of early man, and the other is to observe and record the dental condition of existing primitive peoples.

There are far too few specimens of the very early forms of man, such as the Java man, the Piltown man, or the Peking man, available for the drawing of any conclusions concerning their freedom from dental dis-

orders. It is known that the Neanderthal man, who lived in the last interglacial epoch, suffered from the ravages of pyorrhea. Relatively little weight could be placed upon any immunity to dental diseases in these early types of man since their tooth and jaw structure is quite different from that of the present species of man, *homo sapiens*.

It is probable that our present species of man, *homo sapiens*, has always been more or less subject to dental troubles. This may be correlated with the refinement of the bony and muscular structures of the face and jaw, which has allowed man to develop the extremely valuable accomplishment of articulate speech. The men who lived in France during the last glacial period were troubled with carious or decayed teeth. Many of the skeletons of men of this period show decayed teeth. More than 20,000 years ago, in North Africa there lived a white people of the Mediterranean subrace. The type skulls of this culture are in the collection of the University of Minnesota. One of these skulls has teeth in an advanced state of decay.

*By Max C. Markley, Ch. E., Ph.D., professor of agricultural biochemistry, University of Minnesota, University Farm, St. Paul, Minnesota.

IT HAS ALWAYS BEEN SO

Once in a while R. G. Ingersoll, aided by his wonderful command of language, utters a sentiment worth preserving, and here is one of them. It concerns the alleged struggle between capital and labor: "Here is a shoe shop. One man in the shop is always busily at work during the day—always industrious. In the evening he goes courting a good nice girl. There are five other men in the shop and who don't do any such thing. They spend half of their working hours in loafing and their working evenings in dissipation. The first young man by and by cuts out from these others and gets a boot and shoe store of his own. Then he marries the girl. Soon he is able to take his wife out to ride of an evening. The five laborers, his former companions, who see him indulging in this luxury, retire to a neighboring saloon and pass a resolution that there is an eternal struggle between labor and capital."—*Exchange*.

DURATION OF FRACTURES AND OPERATIVE DEFECTS OF SKULL AS REVEALED BY ROENTGENOGRAMS (A FOLLOW-UP STUDY OF ONE HUNDRED PATIENTS)

In order to obtain some idea of the reaction of the skull to traumatic and surgical defects, Mark Albert Glaser and Edward S. Blaine, Los Angeles (Journal A. M. A., July 4, 1936), studied 100 cases by repeated roentgen examination over a period of from one to ten years. Linear fractures in children less than 6 years of age disappear within from six to twelve months after injury. In the minority of cases, linear fracture in adults begins to fade from six to nine months after injury and disappears in from twelve to eighteen months. The majority, however, show fading from eighteen to

twenty-four months after injury and entirely disappear from four to five years, rarely longer. In depressed fractures without elevation, the fragments become rounded and unite, and the lines of fracture cannot be detected, though the depression is apparent. In operative defects wherein the bone has been removed, or in cases of depressed fracture wherein the fragments have been removed, the cranial defect never becomes smaller, the only change being a rounding of the edges. Bone flaps may either undergo absorption or appear normal. Bone grafts properly placed form a definite covering over the defect. In medicolegal cases of old and recent injury the approximate age of the existing line of fracture may be determined. The status of questionable fracture lines may be determined by their fading and disappearance. Roentgenograms taken from six months after injury in children to nine months after injury in adults are as valuable as those taken immediately after injury in determining the presence or absence of fracture.

THE TACTICS OF OPPOSITION

1. *Be Noisy*

If the majority favors a plan, support it, but rage vociferously at the methods of the administration. Covertly obstruct. (This is called "deep stuff.")

2. *Make Lots of Noise*

Propose other plans. The more plans the greater confusion. (This is called "smoke screen.") If possible gather support for a plan that will defeat the whole movement. (This is called "counter-movement.")

3. *Be Loud*

Try to divide the supporters of the movement that you wish to obstruct or destroy. (This is called "the split.")

4. *Yell and Rage*

Challenge the sincerity of any or all leaders of the other side. (This is called "vilification.")

5. *Be wail*

Place yourself in a position where you may get bumped. Scream and cry at the terrible injury. This will excite some sympathetic support. (This is called "the squawk.")

6. *Roar*

Keep everybody as mad as possible. (This is called "inciting unrest.") Be quite careless with the truth, if necessary. Few take the trouble to investigate inflammatory allegations. (This is called "stretching it.")

7. *Rave*

Threaten and bull-doze. (This is called "throwing a scare" or "putting on the heat.") Occasionally let loose a dire prediction. The latter goes well. (This is called "auguring ill.")

8. *Moan and Groan*

Wear an air of deep suffering. (This is called "martyrdom.")

9. *Yawp*

When you see that the fight is hopeless, that the others are surely going to win out and that your cause

is lost, claim all the credit. (This is called "getting on the bandwagon.")

10. *Side-Step*

Start something else. (This is called "staging a comeback.")—*Oregon Medical Reporter*.

Marriages

CHARLES ALLISON, Kankakee, Ill., to Miss Harriett Rossi of Braidwood, recently.

ABRAHAM I. RAMENOFKY, La Salle, Ill., to Miss Elizabeth Lantin of Los Angeles, June 7.

Personals

Dr. Richard M. Davison was chosen president of the Chicago Tuberculosis Society at its annual meeting recently.

Dr. Ernest E. Davis, Avon, addressed the Jo Daviess County Medical Society in Stockton, June 20, on eclampsia, and Dr. George C. McGinnis, Warren, on injection treatment of varicose veins.

Dr. George de Tarnowsky was chosen president-elect of the Chicago Gynecological Society at its annual meeting, June 12, and Dr. Harold O. Jones was installed a president.

The Whiteside County Medical Society was addressed at Prophetstown, June 25, by Dr. M. Herbert Barker, Chicago, on "Treatment of Hypertension with Special Reference to the Cyanates."

Wilbur R. Tweedy, Ph.D., has been appointed professor and head of the department of physiologic chemistry at Loyola University School of Medicine, succeeding the late William C. Austin, Ph.D. He has been associated with the medical school since 1925.

The new officers of the Chicago Urological Society for the year 1936-37 are: President, Harvey A. Berkey; Vice-President, William J. Baker, and Secretary-Treasurer, C. Otis Ritch.

Drs. Clayton J. Lundy, LeRoy H. Sloan and George de Tarnowsky presented the scientific program at the July 6 meeting of Hancock County Medical Society at Carthage, Illinois. This meeting is in honor of five doctors of that county who are celebrating fifty years in the practice of medicine.

Dr. Ruben Nomland will assume the Professorship of Dermatology at the University of Iowa, Iowa City, July 1.

Dr. Clifford G. Grulee, Chicago, gave a paper on "Care of Premature Infants" before the McHenry County Medical Society on July 16.

Dr. George J. Musgrave, Chicago, addressed the Christian County Medical Society, July 23, on "Nasal Accessory Sinuses."

Dr. Rudolph Schindler has been appointed to the position of attending gastroscopist at Michael Reese Hospital, beginning July 1, 1936.

Dr. Harry L. Huber, Chicago, read a paper entitled "Allergy in General Practice" before the Menominee-Marquette Medical Society, July 9.

Dr. Perry J. Melnick has resigned as Pathologist at Springfield Hospital, because of the pressure of his duties at the Decatur and Macon County Hospital.

Dr. A. A. Law, of Chicago, addressed the Union County Medical Society which met in conjunction with the medical staff of the Anna State Hospital, May 14, 1936. A large group of physicians of southern Illinois were present.

Dr. Erwin P. Zeisler addressed the members of the DeKalb County Medical Society, June 25, on "The Treatment of the Commoner Diseases of the Skin."

News Notes

—The cornerstone of a new medical and dental laboratory building of the University of Illinois College of Medicine was laid June 4.

—A quarantine was placed on dogs in Elmhurst and Naperville early in June, when the deaths of one child and several head of cattle from rabies were reported.

—The third Frank Billings Lecture of the Thomas Lewis Gilmer Foundation will be delivered by Dr. Henry A. Christian, Hersey professor of theory and practice of physics, Harvard University Medical School and the graduate school, October 26, at a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine. The topic will be "Edema, Diuretics, Diuresis."

—Free inspection of automobiles, compulsory on all owners of cars since July 1 is expected to reduce accidents by eliminating mechanical defects, and to lessen noise in the city. Every car registered in Chicago will be required to have an inspection twice a year. A city wide rally, as a prelude to the inauguration of compulsory in-

spection, was held in Grant Park, June 30, under the auspices of the Keep Chicago Safe Committee and the Chicago park district.

—The police bureau of accident prevention has equipped five automobiles with loud speakers to spread a message of traffic safety, according to the *Chicago Tribune*. Each car, manned by two specially trained policemen, will tour the city, particularly in the vicinity of schools, announcing the "do's" and "don'ts" of safe driving and safe walking. Motorists and pedestrians committing minor infractions will be warned politely through the loud speakers.

—An attractive exhibit of a working model of the heart and circulatory system is on display in the Washington Street corridor of the Marshall Field and Company Annex Building.

Members of the Chicago Medical Society are requested to watch this display window, to tell their patients about it, and to make suggestions for future displays to the Educational Committee at 30 North Michigan Avenue.

—Five members who had completed fifty years in the practice of medicine were honored by the Hancock County Medical Society at a dinner meeting in Carthage, July 6. The guests of honor were Drs. Charles L. Ferris, Carthage, who graduated in 1878; Charles A. Runyon, Elvas-ton, 1884; John A. Miller, Hamilton, 1881; Thomas J. McDaniel, Plymouth, 1886, and John R. Bryant, West Point, 1885. The program included a sound motion picture on "Forceps Delivery," lent by Dr. Joseph B. De Lee, and a motion picture on the heart, shown by Dr. Clayton J. Lundy, Chicago. Speakers included Drs. Leroy H. Sloan and George De Tarnowsky, both of Chicago.

—The state health department has issued a bulletin asking the cooperation of the public in the proper handling of emergencies involving the risk of rabies. The department reports that during the week June 14-20 twenty-six animal heads from seventeen counties were sent to the diagnostic laboratories of the state health department for examination, and during the same period vaccine for giving the Pasteur antirabic treatment to 131 persons in twenty-four counties was sent out by the department. Up to June 30, 373 heads had been examined by the department laboratories this year, vaccine sufficient to treat 1,353 persons had been distributed, and 4,374 cases of dog bite wounds had been reported.

—The state health department reported that two cases of Rocky Mountain spotted fever had recently been recognized in Illinois. One of the patients, a cattle raiser's wife, living on a farm near Canton, told of finding a tick on her head nine days prior to the onset of her illness. Shortly before she had been working with sick steers recently purchased through the Peoria stockyards, where they had been shipped from the West. Apparently the tick had transmitted the disease to this patient, it was said. The other patient, a filling station attendant at Clinton, had no recollection of a tick or other insect bite; presumably an infected insect had been brought along by an automobile party, the department reported.

—There were 1,374 cases referred for examination to the behavior clinic of the criminal court of Cook County during the first five years of its existence, according to a recent report. Of this number, 1,268 received complete psychiatric, psychologic and physical examinations and intensive social service investigation; six were given only physical examinations on order of the judge; sixty-four refused examination or were discharged before a complete examination could be made; thirty-six were short-service cases; that is, they were transferred to the psychiatrist at the House of Correction or sent to some other clinic. There were 199 patients, or 15.6 per cent, who were found to be actively psychotic and were committed to hospitals for mental disease; 122, or 9.6 per cent, were found to be so mentally defective that commitment to an institution for the feeble-minded was warranted; an additional 7 per cent were mentally defective (borderline) but not sufficiently so for commitment; 192, or 15.1 per cent, were found to be suffering from some mental or nervous disorder or personality defect but not serious enough to warrant commitment by the court to a hospital for mental diseases. In most of these cases treatment was recommended; 661 patients, or 52 per cent, showed no evidence of organic or functional nervous or mental disease or feeble-mindedness. Under the classification "Psychoses," dementia praecox led the list of diagnoses with a total of sixty; the paranoid state was second with forty-one, and alcoholic psychosis third with twenty. Although it was intended that examinations by the behavior clinic be made after a person was

convicted of a crime but not yet sentenced, the majority of cases have been referred after indictment but before conviction.

—The new officers of Chicago Urological Society for the coming year, 1936-37, are as follows: President, Harvey A. Berkey; vice-president, William J. Baker; secretary-treasurer, C. Otis Ritch.

—At the annual meeting of the Chicago Society of Internal Medicine held May 25, the following officers were elected: President, Walter L. Palmer; vice-president, Andrew C. Ivy; secretary-treasurer, Clarence F. G. Brown.

Deaths

WILLIAM HENRY BAHL, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; aged 63; died, April 23, in the Illinois Masonic Home, Sullivan, of mitral insufficiency.

WILLIAM H. DOAK, Martinsville, Ill.; University of Wooster Medical Department, Cleveland, 1874; aged 93; died, April 23, of arteriosclerosis and chronic nephritis.

MICHAEL HENRY EGAN, Chicago; Minneapolis College of Physicians and Surgeons, 1891; aged 70; died in April.

GORDON VAN BUREN FLETCHER, Chicago; Meharry Medical College, Nashville, 1930; aged 38; on the staff of the Provident Hospital, where he died, April 11, of nephritis.

JAMES WHITNEY HALL, Chicago; Kentucky, School of Medicine, Louisville, 1890; member of the Illinois State Medical Society; served during the World War; for many years a member of the lunacy commission of the Cook County Court; aged 66; died, April 29, in the Illinois Central Hospital, of coronary sclerosis and hypertension.

*FRANK A. NOYES, Biggsville, Ill. (licensed in Illinois in 1878); aged 86; died, April 4.

EVERETT JOSHUA PEEK, White Hall, Ill.; Chicago College of Medicine and Surgery, 1907; aged 57; died, March 21, in Houston, Texas, of coronary occlusion and chronic hypertension.

*IMAS PRYOR RICE, Aurora, Ill.; University of Illinois College of Medicine, Chicago, 1913; a Fellow, A. M. A.; served during the World War; medical director of the Kane County Spring Brook Sanitarium; aged 47; on the staffs of the Sherman Hospital, Elgin and St. Joseph Mercy Hospital, where he died, April 23, of a staphylococcal infection, complicated by pneumonia.

CHARLES RAINEY THOMAS, Roodhouse, Ill.; St. Louis Medical College, 1887; member of the Illinois State Medical Society; past president of the Greene County Medical Society; aged 72; died suddenly, April 3.

*Information as published in June Journal was confused and incorrect.

*“the commonest ailment of infants
in the summer months”*

One of the outstanding features of DEXTRI-MALTOSE is that it is almost unanimously preferred as the carbohydrate in the management of infantile diarrhea.

In diarrhea, "The sugar is added gradually in conditions admit, some sugar other than milk sugar or cane sugar being used, preferably dextrin and maltose."—H. E. Small: *Diarrhoea in battle and travel*. Maine M. A. 12:152-158, Jan. 1932.

In diarrhea, "Carbohydrates, in the form of dextri-maltose, well cooked cereals or rice, usually can be handled without trouble."—B. B. Jones: A discussion of some of the commoner types of infantile diarrhea, and the principles of the diets used in their treatment. *Am. J. Maln.*, 66: 411, '15.

"The most desirable sugar is dextrin because of all the sugars maltose is least apt to be attacked by bacteria."
—A. I. Blau: The use of protein milk
D. 119-859, April 2.

Concerning the treatment of diarrheas, it is an indication that weight remains stationary, it is an indication that the stools, loss of substance is occurring through the stools. To equalize, mostly in the form of alkaline salts. To equalize, this loss of substance, the diet must be increased, but in such a way as to avoid causing fermentation. This may be done by adding dextrin-maltose preparations of protein to the food, increasing the calories until the infant is taking 160 calories per kilo, of body weight. —H. L. Rainford

Nutritional disturbances, Arch. Pediatr. 41:771 Nov. 1924.

[illegible]

"It should be a percentage of lactose made up of lactose and protein milk, was of great periods without adding carbohydrates, carbohydrate must be emphasized that regardless of the tools, carbohydrate must be in milk within a reasonable time fold collapse."—G. Feldstein
1933.

In cases of malnutrition and indigestion. The appetite improves rapidly, and the stools soon become normal in appearance, if the sugars are intelligently prescribed. By this I refer to proper proportions of dextrin and maltose. When there is a tendency to looseness, I have used the dextrin-maltose for

"After the preliminary short period of starvation, protein milk should be used. . . . When the diarrhoea has been sufficiently checked, dextrin-maltose may be added and gradually increased until from 4 to 6 tablespoons are being used." —W. L. Drury: *Acute nutritional disturbances in infancy*. Univ. of Ont. *Medical Journal*, April, 1932.

Regarding the treatment of diarrhea, "In our experience, the most satisfactory carbohydrate for routine use is Mead's dextrimaltose No. 1." —F. R. Taylor: "Summer Complaints," *Southern Med. & Surg.*, pp. 555-559, August, 1927.

There is a widespread opinion that, thanks to improved sanitation, infantile diarrhea is no longer of serious aspect. But Holt and McIntosh declare that diarrhea "is still a problem of the foremost importance, producing a number of deaths each year. . . ." Because dehydration is so often an insidious development even in mild cases, prompt and effective treatment is vital. Little states (Canad. Med. A. J. 13: 803, 1923), "There are cases on record where death has taken place within 24 hours of the time of onset of the first symptoms."

In cases of diarrhea, "For the first day or so no sugar should be added to the milk. If the bowel movements improve carbohydrates may be added. This should be the one that is most easily assimilated, so *dextri-maltose* is the carbohydrate of choice."—*W. H. McCaslin: Summer diarrheas in infants and young children, J. M. A. Alabama* 1:273-282, Jan., 1932.

use a preparation with a high dextrin and relatively low maltose content, as Mead's dextrin maltose." "It is desired to feed an unusually large amount of sugar to a baby, it is well to use a maltose-dextrin preparation, as in this way there is less danger of bringing about this sugar reaction than if lactose were used." *W. H. Hill, Phila., 1922, p. 206.* Saunders Co.

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ture, usually one-third milk and two-thirds
ally skimmed at first, and a half ounce of
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on the other hand, are more liable to produce
diarrhea. . . . Lactose which was very popular at
one time, is never used in our work. The consensus
of opinion seems to be that milk sugar is often
source of indigestion in normal infants and the
primary cause of fermentative dyspepsias in
infants. — J. H. Reading, Jr., *Archives*
of Pediatrics, Vol. 22, No. 2, 1923.

Protein milk may be continued for several weeks when a gradual transition to a whole milk or evaporated milk formula, which will supply about one and one-half to two ounces of whole milk to every pound of body weight, is reached. This also should finally have the addition of dextrin-maltose amounting to five to seven per cent. — **R. A. Strong: Summer diarrheas in infancy and early childhood, Arch. Pediat. 47:344-354, June, 1930.**

"It should be remembered that a high percentage of lactose may cause diarrhoea. If a high percentage of sugar be required it is better to use it by dextri-maltose, such as Mead's Nos. 1 and 2, where the maltose is only slightly in excess of the dextrins, thus diminishing the possibility of diarrhoea."—W. J. Pearson, Graduate

preparations are preferred, for they do not ferment readily, are rapidly absorbed and leave very little for fermentation. —V. A. Blenkle: Protein milks in infant feeding, Arch. Pediat., 42:743-760, Nov. 1925.

"... I begin to add carbohydrates slowly, by replacing $\frac{1}{4}$ ounce Casec every two days with $\frac{1}{4}$ ounce of Dextri-Maltose, preferably Dextri-Maltose Number one. As a rule, this is tolerated. When one ounce of Dextri-Maltose is used, the Casec, of course, should be discontinued."—*I U*

Read: The etiology and treatment of

"When sugar causes diarrhoea one can change the form of it. Mead's Dextrimalose in small doses is more quickly absorbed and so superior to castor [cane] sugar. Lactose is expensive and seems not to be better than castor sugar."—H. B. Gladstone: *Infant Feeding and Nursing*

"Milk-sugar, which is used in the past, should never be used when there is any digestive disturbance. It is not as easily digested as either cane-sugar (granulated sugar) or dextri-maltose. The latter is the best of all sugars to use, especially if there is any tendency to looseness of the bowels."—A. Brown: *The Normal Child; Its Care and Feeding*, F. D. Goodchild Company, Toronto, 1923, p. 120.

diarrhea, "Dextrin-maltose" is used, for they do not ferment and are easily given by little children. A. Binkley: Protein milks. *Pediatr.*, 42:743-760, Nov., 1936.

used to partly replace the lactose in Mead's Nos. 1 and 2. In our view these mixtures (Mead's Nos. 1 and 2) are most suitable than lactose, and if for any sugar is less suitable than lactose, and if for any reason there is objection to the use of lactose, it is obtained by the addition of carbohydrates, while fat and casein are reduced. For this purpose dextrin-maltose and flour are better than the ordinary sugars, since they are more slowly absorbed and have greater efficacy in their powers of controlling the flora in the large intestine. W. J. Pearson: The flora in the large intestine. *Recent Advances in Diseases of the Colon and Rectum*. W. B. Saunders, Phila., 1930.

For cases of fermentative diarrhea, "... the ideal plan of treatment would be to give a food which is low in sugar (the food which that group of organisms (the one) and high in protein. Calcium caseinate milk accomplishes this purpose. In our series of cases, we found it was necessary to use the casein calcium for from 5-8 days; we then stopped it and added dextro-maltose to the formula."—A. G. DeSanctis and L. V. Pauder. The value of calcium caseinate milk in fermentative diarrhea. Arch. Pediatr.

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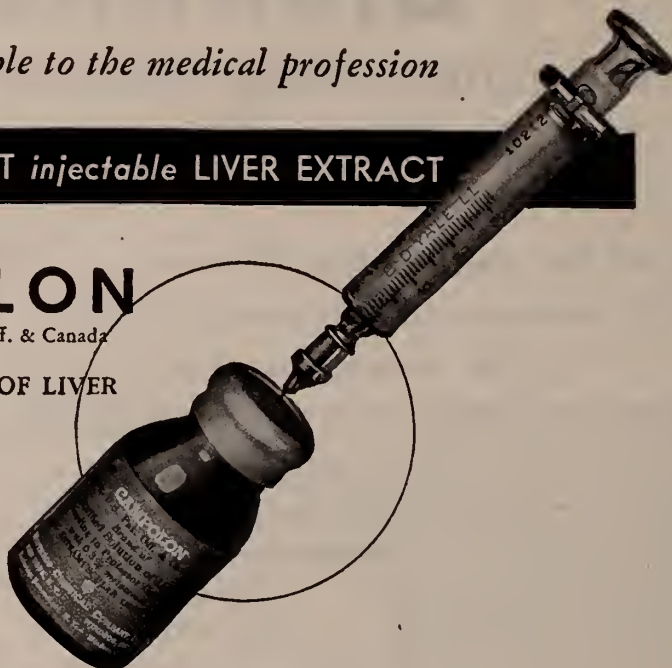
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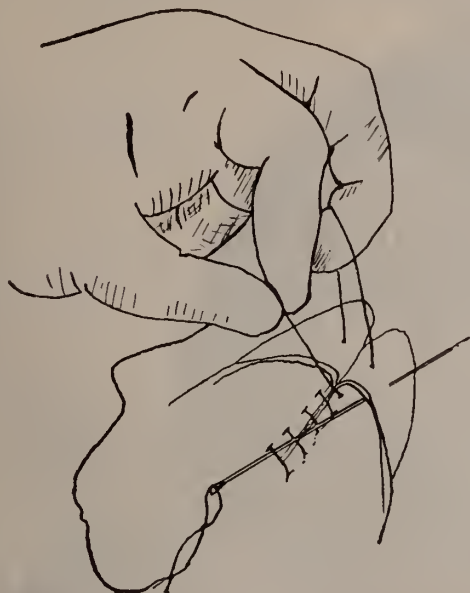
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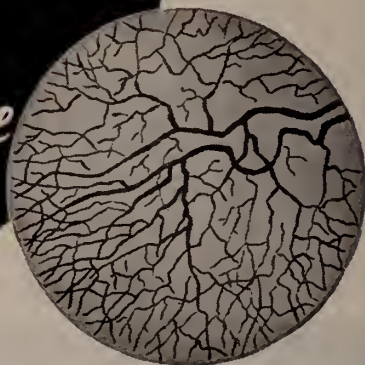
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THEORY AND PRACTICE OF PSYCHIATRY. By William S. Sadler, M. M. St. Louis. C. C. Mosby Company. 1936. Price \$10.00.

As the author states in his Preface there is an abundance of literature dealing with the psychoses from the institutional standpoint there seems to be a dearth of practical literature dealing with the non-psychoses group of nervous disorders. It is with a view of helping to meet a great need that this volume has been written. It is the author's hope in this work to contribute something which will assist the medical profession in divesting mental hygiene of many of its psychiatric mysteries.

ENDOCRINOLOGY IN MODERN PRACTICE. By William Wolf, M. D., M. S., Ph. D. 1,018 pages with 252 illustrations. Philadelphia and London. W. B. Saunders Company, 1936. Cloth, \$10.00 net.

This book has one of its prime objects the encouragements of the physician to think along endocrine lines, no matter what his general or special field happened to be.

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VASCULAR DISORDERS OF THE LIMBS. By Sir Thomas Lewis. New York. The Macmillan Company. 1936. Price \$2.00.

This book is arranged for the use of students and practitioners. The advances and a description of modern methods of testing the peripheral circulation, are incorporated in the present book, which is written as a practical guide the management of circulatory troubles in the limbs.

THE ART OF TREATMENT. By William R. Houston, M. D. New York. The Macmillan Company. 1936. Price \$5.00.

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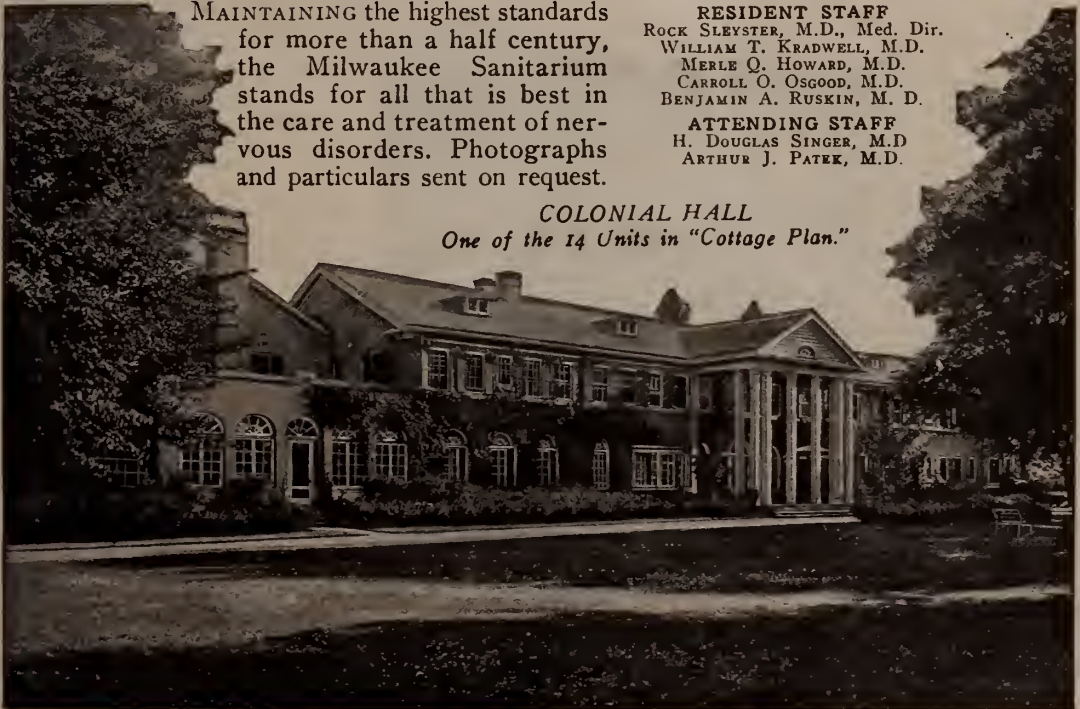
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- (1) 1927. J. Exp. Med., 46, 699
(2) 1935. J. Nutrition, 9, 735
(3) 1929. Biochem. J., 23, 803

- (4) 1931. J. Biol. Chem., 94, 185
(5) a. 1933. J. Am. Diet. Assoc., 9, 295
b. 1931. J. Nutrition, 4, 267

- c. 1935. Am. J. Pub. Health, 25, 1340
(6) a. 1925. Ind. Eng. Chem., 17, 69
b. 1926. Ind. Eng. Chem., 18, 85

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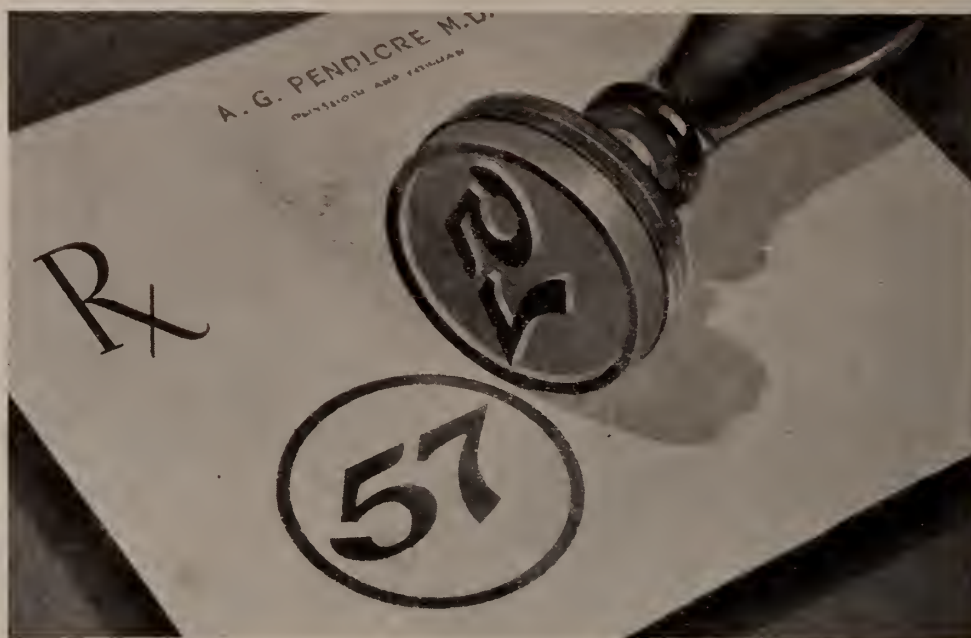
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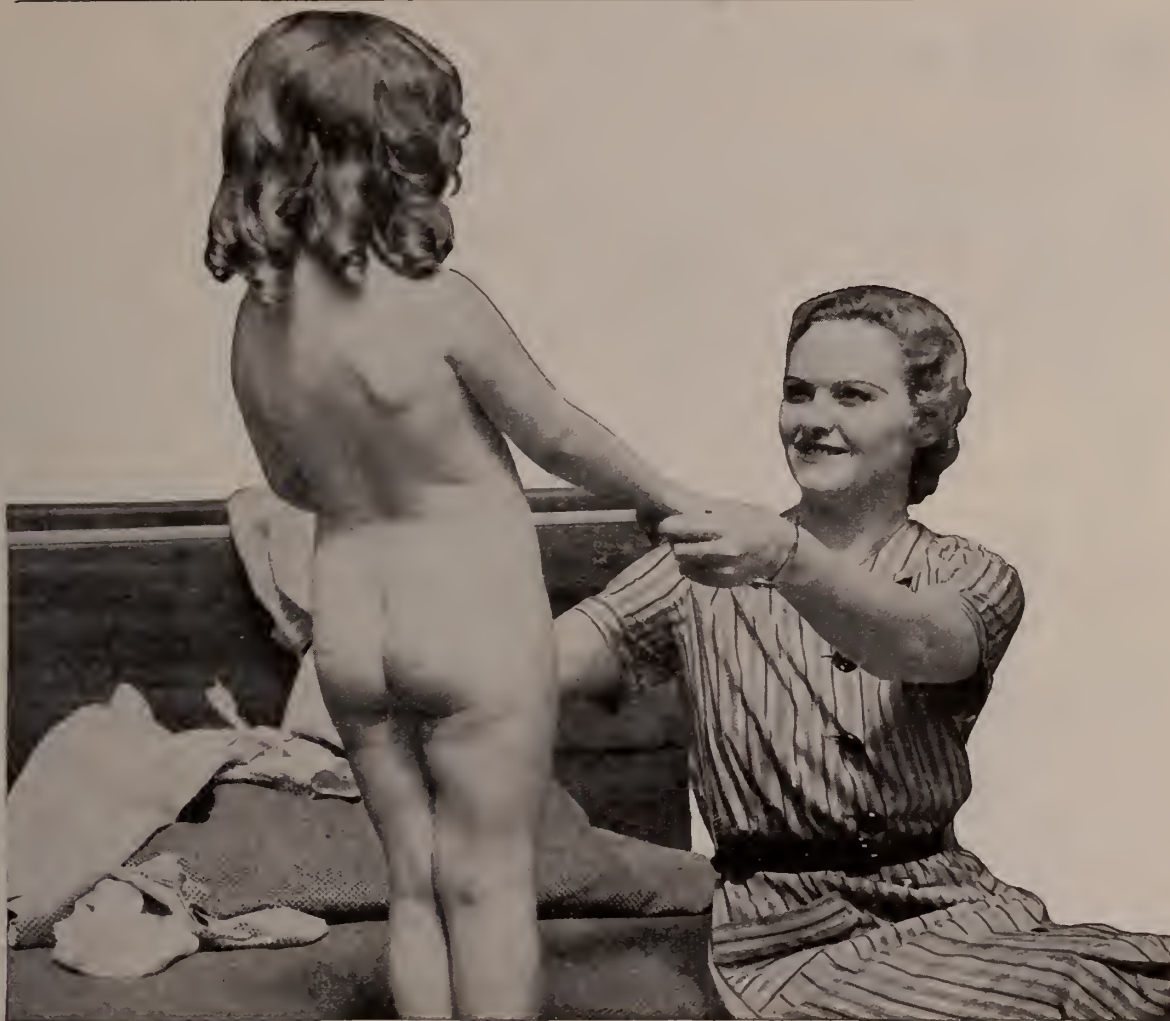
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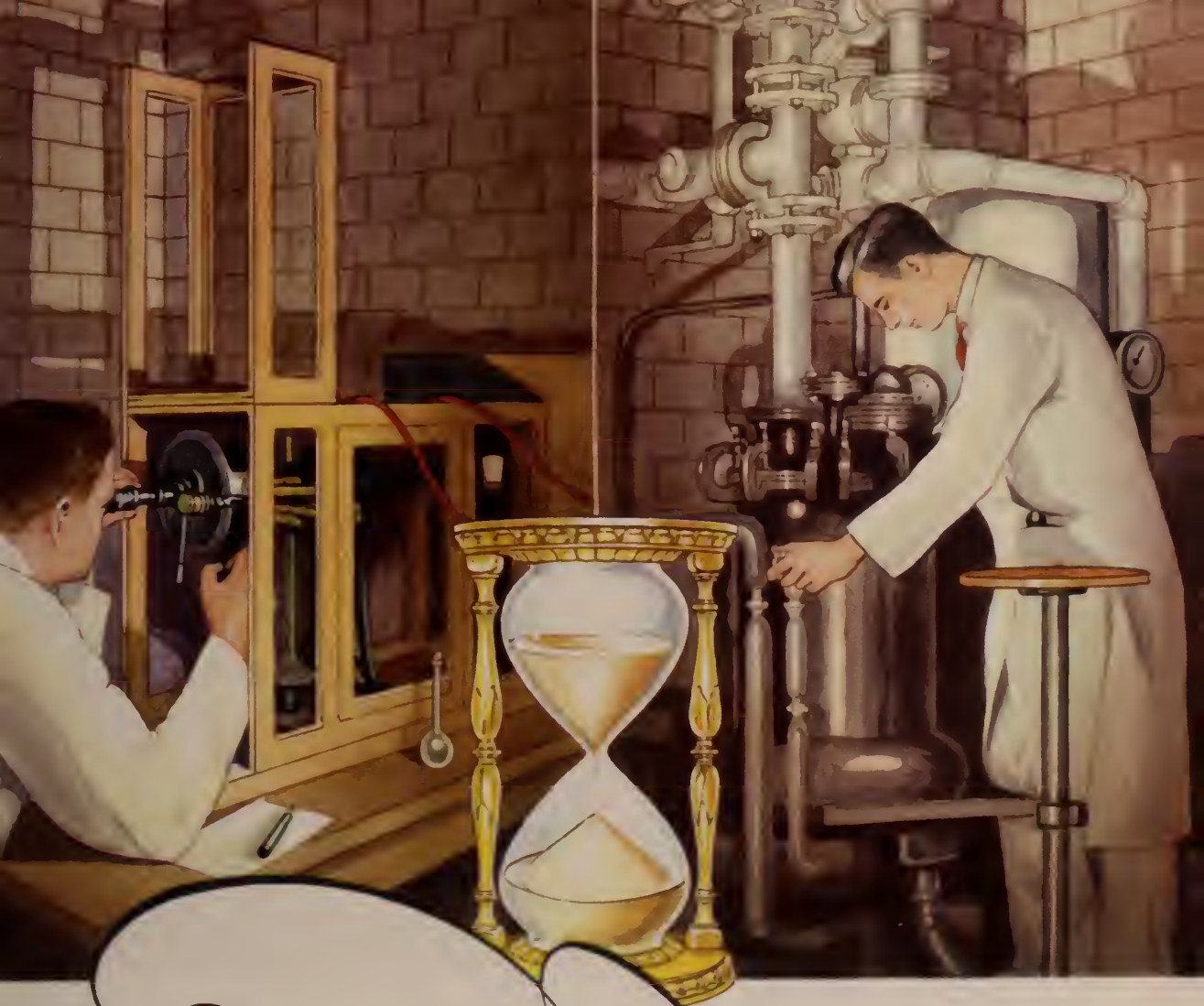
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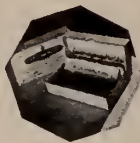
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Editorials

EARLY RECOGNITION AND TREATMENT OF POLIOMYELITIS

Poliomyelitis, like the poor, we have always with us. So, too, is the theory that with poliomyelitis, as with smallpox, "the ounce of prevention is worth the pound of cure" as demonstrated by inoculative immunization. Results still stop at the point equivocal.

Early diagnosis is admitted the first step toward cure of any disease, and from the start such a finding has been recognized as of maximum assistance in the prevention of the paralysis of poliomyelitis, since in a large percentage of cases a diagnosis of poliomyelitis can be established days prior to the onset of paralysis. It has never been satisfactorily established as to what is the actual value and efficacy of convalescent serum in acute poliomyelitis. F. W. Laidlaw in his "Poliomyelitis in the State of New York in 1931" has stated that in 55% of the cases diagnosis was made during the preparalytic stage, and the case for serum remained wide open.

Communiques as to serum and its work are frequent, variable and almost unanimously inconclusive. Advocacy for serum seems to be gaining strength.

Indeed, reports from many quarters are to the effect that determined effort *becomes more strenuous for the development of an active method of immunization against poliomyelitis*. This would indicate revival of hope in the clinical attitude towards a disease condition by unknown and uncontrollable host factors. But since such an achievement is still problematical, it behooves the profession at large to refuse to discard the disputed values of convalescent serum in treatment of the disease. Truly enough the case for this form of biologic therapy has as yet to be made, all argument to the contrary, withstanding. But that the procedure is far from useless may well be gathered from experiences in Denmark as cited in the article by Claus Jensen, in the Proceedings of the "Royal Society of Medi-

cine" for 1935, page 1007. These commented on experiences collected during the 1934 epidemic in Denmark. At that time about 4,500 cases in both the paralytic and the preparalytic stage were hospitalized. In November, 1934, a committee was appointed to make an investigation and a report which was published later in the "*Ugeskrift for Læger*," Volume 97, pages 837-841, 1935.

Epitomizing the findings of this Danish Commission let it be connoted that the recommendations were hospitalization as soon as is possible, with prompt serum treatment and a residence of at least three weeks in the hospital. The average dose recommended was one cubic centimeter per kilogram of body weight, with emphatic prescription that repetition of this injection, and if necessary, a larger dose, is imperative on the slightest sign of progress of the disease.

Donors of the serum were abortive, aparalytic and paralytic cases of poliomyelitis. The abortive cases were bled on the thirteenth day after the onset of the disease; the aparalytics, on the twenty-sixth day, and the paralytics on the twenty-ninth day. Some 80% of the patients admitted to the hospital were given treatment by the intravenous or intramuscular route. Usually the serum was reserved for cases aparalytic at the time of administration, and it was admitted that no conclusions could be drawn as to the efficacy of the serum. The table reprinted here from the Danish findings shows that the serum played a significant part in preventing paralysis. It must be noted, too, that though convalescent serum was not used prophylactically, that a concentrated hyperimmune horse serum was used in two soldiers' camps. Results were negative in that no cases occurred in either treated or untreated groups, although one camp had 500 soldiers, each of whom was given five cubic centimeters of the horse serum intramuscularly, and in the other camp only about half the soldiers or 200 were treated.

The poliomyelitis season is again with us. It behooves every physician to exert himself to the utmost to discover prophylactic or at least palliative measures against this dread disease.

Now these findings of Jensen, showing a total incidence of paralysis added to two other recent reports of moment are splendid testimony for the cause of continued use of the serum.

TABLE OF DANISH FINDINGS

Percentage of Paralyses in Relation to the Day on Which 2,992 Patients Were Given Serum			
Serum-Treated Cases Cases with Paralysis			
Beginning of the Meningeal Stage Before Treatment	Number	Number	Per Cent
Less than 1 day.....	802	33	4.1
1 day	913	50	5.5
2 days	652	44	6.7
3 days	283	48	17.0
4 days	125	15	12.0
5 days	78	11	14.1
6 days	50	9	18.0
More than 6 days.....	89	27	30.3
Total	2,992	237	7.9

In the *Annals of Internal Medicine*, Nov., 1934, Cowie, Parsons and Lowenberg report clinicopathological observations on 125 acute cases of infantile paralysis that they found no residual paralysis in 80 preparalytic cases treated with human convalescent serum, and transfusions from normal adults. The *ILLINOIS MEDICAL JOURNAL* on page 296 has an article by S. O. Levinson dealing with a five-year review of anterior poliomyelitis in the Chicago area, in which he observed paralysis in only a few cases, and that disappeared after a few weeks. The decline of acute symptoms in early paralytic cases as well as in the preparalytic group especially impressed Levinson who made his findings from 149 preparalytic cases of the seasonal endemic type in the Chicago area.

Recommendations are for large doses of convalescent serum, (100cc or more) given intravenously, and small doses (10 to 15cc) intraspinally at the time of the spinal puncture. Repetition of the intravenous doses are called for within from 12 to 24 hours if the symptoms are not subsiding or if the temperature is still unduly high. Whether serum treatment is the one specific must yet be proven; so far it has shown the most intrinsic value, even though orthopedic measures must be begun early and kept up vigorously both in cases where only the paresis appears or the acute paralytic disease exists.

There is so much more about poliomyelitis that is unknown than there is that is known. As to penetration of the antibody into the nervous system at any stage of the disease, experimental data is lacking completely. Rous, Peyton, MacMaster and Hudack in the *Journal of Experimental Medicine*, in 1935, held that it was beyond probability that any type of antibody can reach the virus once "virus cell union has taken place, yet that undoubtedly neutralization of virus in

dead cells and virus in transit can take place." So much in the dark is science as to the distribution of the virus in the cord during the preparalytic stage in man, that there may be some effect of antibody in almost any stage.

The effect of the serum on man is different from the effect of serum on monkeys so that experimental data on monkeys cannot be applied to man.

There is a difference in the severity of the disease, and there is difficulty in managing monkeys with acute poliomyelitis. Several authorities admit a partial prophylactic value in the use of the serum on monkeys, however, and something over a twenty per cent reduction in the mortality rate of the monkeys. Probable recovery from paralysis is beyond statistical value. It cannot be estimated until after the first convalescent year. With some patients recovery of muscle strength is not manifested until the second year.

The trend is to give either larger doses of the serum or to secure higher concentration of the serum. It is an admitted fact that from 25 to 60% of poliomyelitic convalescents possess no neutralizing substance against the virus. Some serum centers get away from this by preparing pools of serum from some fifteen to twenty donors. Most potent serums seem to be those produced in animals but they are as yet without benefit to man, as their use is contraindicated by reactions from intraspinal administration. Pooled normal human adult serum, carrying an equal or greater content of neutralizing substances have been proven to be as practical of result as the convalescent serum.

The New York city epidemic of 1931, and another epidemic in Connecticut are still productive of greatest argument among the men handling each of these visitations. Verdict of the New York Academy of Medicine stands: "The results of the study are inconclusive."

YOU WERE TOLD TWENTY YEARS AGO THAT COMMUNISM WAS OUT TO DESTROY MEDICINE

Faced by appalling conditions of lay intervention, political control and governmental interference wreaking havoc that the most nonchalant or insouciant, or stoical or criminally indifferent physician, can no longer evade, or

elude or ignore, the "cry from Macedonia" comes loud and clear:

"Why didn't somebody tell us before? Why hasn't the profession been informed of these trends by its leaders, at the smallest signs of the first symptoms?"

In at least two contemporary medical journals within a comparatively short time the question was asked: "Why did not some doctor or doctors foresee and forewarn the profession of the oncoming lay dictation political control of medical practice and general socialization of the healing art?"

To these inquiries or criticisms let the information be handed with emphasis:

"Gentlemen, you were told but you would not listen.

"There are none so blind as those, who having eyes, will not see, nor so deaf as those having ears, who hear not." For over twenty years the columns of the ILLINOIS MEDICAL JOURNAL have preached the doctrine of danger from socialistic sources and sounded the tocsin of alarm. Bound files of the JOURNAL offer black and white testimony to this. There lies the indictment of the printed word. And as further evidence of the fact that Illinois knew and saw and attempted to warn the country of the enemy lurking along the way let reference be made to the present editor of the ILLINOIS MEDICAL JOURNAL, upon assuming the office of president of the Illinois State Medical society at Peoria, Ill., on May 21, 1913."

This address, entitled "Economic Condition of the Profession," read in part:

"In assuming the office of President of this organization it is customary to make a few appropriate remarks which are of some moment to its members.

"It strikes me that one of the most important questions confronting our profession at the present time is that of the economic conditions of the individual members. Economics under present-day conditions is quite as much a medical as a sociological problem. It is not a local problem either but is a burning question the world over and is one that demands solution. Unless this is arrived at the problem means disaster to the individual physician.

"You are cognizant of the fact that the struggle for existence at present is greater than

at any time in the world's history. The physical conditions of the country are not at fault, but our demands have increased through our intellectual development out of all proportions to our physical ability to satisfy them.

"Are you giving this question due consideration? *Remember that we cannot improve our condition as trade unions improve theirs. That is, by increasing their own incomes at the expense of others.* If we wish to improve our own status we must put our shoulders to the wheel and give a helping hand to that general movement which has for its aim the *physical uplift of the medical profession.*

"In this respect are you doing your share of the work? Or are you waiting for the other fellow to do it for you? And, expecting to share in the benefits with him? Unfortunately, there are shirkers in every walk of life. Oh! well, what's the use? The other fellow is willing to take up my task. Let him bear the burden. I will reap the reward.

"Brethren, that's a selfish view of life. Yet, far too many become imbued with that spirit through thoughtlessness, never stopping to consider the duty they owe in conducting mutual affairs. Your interest in this matter is as great as mine. Mine is as great as yours. Therefore it follows that we each should be willing to do our full part for the common good. *On this economic basis rests the immediate and the future well-being of the medical profession.*

"There are two things in the Christian religion that differ from all others: one is its extreme simplicity, the other its universal applicability. The 'Golden Rule' is an epitome of the 'Sermon on the Mount.' It is also the master rule of ethics in our treatment of our fellow men. To say that it is impossible in practice, is absurd.

"Every good citizen makes that precept a rule of his life. Just in so far as he fails to live it, he fails to realize his own ideal. If we, who claim to be fair minded and just, are in doubt as to what we should do to our neighbors; *put ourselves in their place!* Whatever we could expect of a just man under the same circumstances, then that is our plain duty toward him.

"Let us be broad minded enough to look at all sides of men's character. Then we will not be apt to condemn many. 'Smith,' you say, 'is

a 'fraud,' and you can prove it. Do not forget that in all probability Smith is saying the same of you, and Smith is as likely to be right as you are. Get together with him and talk over your differences. Perhaps you will find that you both were wrong.

"The many problems confronting us are overcome only by cooperation out of which comes organization to achieve the common goal. The needs and advantages of such cooperation in our profession are obvious. *Mutual support must be our slogan if we are to exist in perpetuity.*

"The doctor who tries to go it alone in the practice of medicine in this day is making a great mistake. The field is so large and the interests involved are so many and so varied, that no one man can keep in touch with them all without constant help from his fellows. On all sides each man is surrounded by difficult problems of which many if not all, can be solved only by cooperation.

"The legitimate practice of medicine has fallen on perilous times. This is evidenced by the writings of eminent men and by the unrest and agitation of the medical profession the world over, due in part to the fact that sanitation and preventive medicine are reducing disease to a negligible quantity; to some extent to the fact that new 'cults' and 'pathies' have cut into the legitimate sphere of the practitioner; but most of all to the encroachment on the work of the physician through unworthily bestowed charity, by our hospitals and dispensaries, to people able to pay. These factors and others all operate to reduce a physician's income.

"Added to all we have the specter of a new ghost, *in the trend of the times toward communistic medicine.* It is my belief that the *practice of medicine, surgery and allied specialties in the not far distant future will become government, state and municipal functions; a fine outlook for the doctor, is it not?*

"This trend is well illustrated by conditions in England where the doctors had to organize finally in sheer defense of their own means of existence. However, in England, establishing methods of defense was deferred too long. So, in spite of the belated protests of the profession, there was foisted on it the obnoxious national insurance act.

"Shall we in America procrastinate in this

matter the same as was done in England, or shall we take steps now to overcome the evils confronting us? By our silence we play renegade to our own interests.

"I am pleased to note that there is some evidence that the profession is beginning to realize as never before the benefits of organization, not only to individual members but also to the individual in his complex relations. There is considerable evidence that the profession is becoming aroused to the necessity of organizing for something more than purely scientific purposes.

"Cooperation in medical practice is a necessity in the present day. All professional men should be thoroughly acquainted with their rights, privileges and power for safeguarding their own vital interests as well as the interests of the community.

"An organized medical profession in Illinois with its ten thousand members could accomplish much in the way of needed reform and would be able to do much to prevent further encroachments of the evils now threatening to engulf us.

"The watchword of the new administration will be alertness along the lines of organization and cooperation; justice for all practitioners; and a helping hand to the general movement which has for its aim the physical and moral uplift of medicine in the State of Illinois."

Words of prophecy are like the mustard seed. Some fall upon the fertile soil, and others upon the rock. But the profession in Illinois was definitely informed upon that occasion and upon the publication of that speech in the ILLINOIS MEDICAL JOURNAL, and has continued to be informed by hundreds of informative articles from eminent men, since that day as to the designs of politics and communism upon ethical medicine.

Men all over the United States who have failed to read the warning from European experiments with phases of communistic medicine, such as panel practice, state medicine and all its evil relatives have had their ears assailed by far-seeing hard-thinking physicians. In the original army of Paul Revere there were several physicians in New York, some in New England, and the two score right here in ILLINOIS to say nothing of several other alert men of scientific training and capable minds, courageous heart and breadth of vision elsewhere. Of the van-

guard who led the anti-health insurance, anti-socialistic, anti-state medicine campaign twenty or more years ago at least three of the old guard are at present serving as members of the A. M. A. House of Delegates; they represent three different states in that august body.

Perhaps the profession has gone about it erroneously. After all it was neither sage nor sybil but the cackling of geese that saved Rome. And it must be admitted that with words of prescience and wisdom unheeded the medical profession is well on the way to be destroyed by the cackling of geese—mised theorists caught in the net of communistic hoop-la!

EVERY ETHICAL PHYSICIAN IN THE STATE SHOULD BELONG TO THE ILLINOIS STATE MEDICAL SOCIETY

In numbers there is strength. United we stand, divided we fall. A united medical profession can brush away any and all obstacles. It is next to impossible to find a really successful physician who has obtained fame outside the pale of organized medicine.

Are all the eligible physicians in your county members of your local medical society? If non-members of local society are discovered get busy and try to induce them to join at the earliest opportunity.

Doctor, read carefully what a doctor will realize from membership in the Illinois State Medical Society.

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1. For approximately \$10.00 per year you get medico-legal protection; membership in your

County and Illinois State Medical Societies and the ILLINOIS MEDICAL JOURNAL. Membership in the above makes you eligible also to fellowship in the American Medical Association. Affiliation and association with this large, representative body of men is of great value and importance to every physician.

2. Medical Defense. Out of your annual dues paid, the trustees of the State Medical Society are required to turn \$1.50 over to the "medical defense committee" for the protection and defense of members of the society against whom suits for malpractice or damages may be brought. For years the Illinois State Medical Society has been meeting all expenses of such litigation; that is, court costs, attorney's fees, costs of appeals, witness fees, the cost of record—no limitation being placed on this sort of expense of an individual case.

This means that if you become a member of the Illinois State Medical Society you will be defended in every effective manner possible against suits for damages for alleged malpractice, as well as attempted blackmail. This one feature alone is worth many times the cost of membership. Private defense companies are charging \$20.00 to \$75.00 per year and upwards for the defense and indemnity.

Medical Legislation. Also \$1.00 is set aside for a fund to be used by the Legislative Committee for the purpose of combating vicious legislation.

Members of the Illinois State Medical Society are also eligible to membership in any or all of the various affiliated special medical societies in Illinois.

3. Membership in the Illinois State Medical Society. All members of any county Medical Society are *ipso facto* members of the Illinois State Medical Society and will receive all publications of the State Society without any additional fees, dues or subscriptions.

Memberships in the state and local society are necessary before you can affiliate with the reputable professional societies of the country and the American Medical Association. In some states a year's membership in the local society is required before they can secure a license by examination or reciprocity.

4. The Journal of the Illinois State Medical Society. This Journal, owned and published

monthly by the medical profession of Illinois, is sent free to each member. The official organ of the Illinois State Medical Society, one of the largest and most influential state organizations in the country, it is among the most comprehensive state medical journals, both in point of circulation and editorial scope. It ranks highly, both in size and in influence, with all medical journals. *Further, in the fight against economic evils oppressing the medical profession, the ILLINOIS MEDICAL JOURNAL has been not only a leader, but ever a pioneer.* In the Journal is printed the proceedings of the Illinois State Medical Society; the papers presented at the Chicago Medical Society, which is the largest local medical society in the world. The Chicago Medical Society meets every week, and it has fifteen branches, proceedings of which also are printed in the ILLINOIS MEDICAL JOURNAL, as well as of eleven affiliated societies, namely: Gynecological, Pathological, Ophthalmological, Surgical, Urological, Laryngological and Otological; Orthopedic, Pediatric, Neurological. Roentgen Ray, Medical Legal. On the programs of these various societies appear from time to time a great many of the most eminent men of America and Europe. In the Journal also is published the papers read and the reports of all meetings of the respective county society meetings throughout the state, as well as all the news of interest to medical men in Illinois and throughout the United States. The price of the Journal for non-members is \$3.00 per year. It is sent to all members of the Illinois State Medical Society, as one of the perquisites of membership.

5. Reformation of Medical Conditions. Many reforms are being carried on which in previous years were impossible. A few years ago the Medical Legislation Committee of the Illinois State Medical Society succeeded in having passed by the Illinois State Legislature what is considered the best medical practice act in the United States. This Society has a representative as chairman of the committee in Springfield, and the committee is working to the good advantage of medicine in this State. The committee is receiving financial support from the State Medical Society as necessity requires. Every year different cults and branches of so-called medicine try to have special laws passed which will license them

through examinations which do not conform to the medical practice act. It is only through large membership, financial and moral support that this type of legislation can be controlled.

Abuse of medical charities, illegitimate and unethical methods of practice, and all the other evils which have embarrassed the physician and reduced his income can only be successfully handled by a well organized and compact profession, able to take a positive stand on these matters and to carry out its decisions. There is in view (under thorough organization) relief from many of our present difficulties. There never will be devised a patent mechanism which will relieve the doctor of participations in our political activities. Physicians must govern themselves or they will be misgoverned.

6. Eligibility to Fellowship in the American Medical Association. The only way in which a physician can become a member of the State or National organization is through the local society of the County in which he lives. The advantages and privileges to be gained through membership in this great association need not be enlarged upon. Fellowship in the American Medical Association includes *The Journal of the American Medical Association*, the greatest weekly medical journal published in the United States.

7. Regulation of Pharmaceutical Preparations. The American Medical Association has established a committee, known as the Council on Pharmacy and Chemistry, for the purpose of examining, analyzing and reporting from time to time to the profession its findings on the most important proprietary preparations, such as the general practitioner is constantly being importuned to buy and prescribe for his patients. This movement, which is of vital importance to every practicing physician, deserves the support of all members of the profession, regardless of society affiliations. By becoming a member of your local society you will come more closely in touch with organized and systematic efforts for the uplift and benefit of the profession at large.

8. The Completion of Medical Organization in Illinois. The Illinois State Medical Society today comprises three-fourths of the reputable members in the State. It is to the interest of every physician in Illinois to complete and strengthen this organized and concerted move-

ment on the part of the profession for the betterment of local conditions. The suppression of quackery, the prevention of enactment of vicious legislation, and the consummation of other needed reforms can only be accomplished by complete and thorough organization and unanimity on the part of the profession of the State. In this work the support and cooperation of every reputable physician is requested.

The welfare of your profession depends upon the support you give it. A well-organized profession means greater respect and better compensation.

The Illinois State Medical Society desires your support and cooperation. Go to the next meeting of your local or county society and meet the other physicians of your neighborhood. Ask one of the officers of the society for an application blank, fill out the blank, either send or, better, hand it to the President or Secretary, together with the fee for membership in your county society, and thus secure membership in the organized profession of the state and participate in the benefits and privileges of medical organization.

Qualifications for Membership. Every registered physician residing in any county who is of good moral and professional standing and who does not claim to practice any exclusive system of medicine, shall be eligible for membership.

NEW YORK STATE JOURNAL OF MEDICINE WARNS PHYSICIANS TO PREPARE TO COMBAT A FLOOD OF PROPAGANDA TO FOIST COMPULSORY HEALTH INSURANCE ON THE PUBLIC

The Public Relations Bureau of the medical society of the State of New York under date of August 31 released for publication in the daily newspapers the following information:

NEW YORK, Aug. 30.—A warning will be issued to 15,000 members of the New York State Medical Society in the forthcoming issue of the *New York State Journal of Medicine*, urging them to prepare to combat a flood of propaganda to foist compulsory health insurance on the public.

American promoters of European systems of state medicine have been "ominously quiet" re-

cently, an editorial in the Journal will say. The "lull before the storm" will be followed by an inundation of the press of the country with "articles and books to persuade the public to accept cheap medical service in lieu of adequate wages to buy good medical care," according to the Journal.

"Oracles of various phases of social security will tempt the younger medical men with a definite financial return in exchange for the intellectual adventure of working out a career; to exchange the medical development of the individualistic doctor for a job as paid government agent with skill in departmental diplomacy to hold his job; to exchange patients in whom the doctor is interested for public charges who are just so much income and nothing more."

The Journal will emphasize the fact that the medical society is not in partisan politics. "Each member," the Journal will say, "belongs to the political party of his own choice and votes for whatever ticket he pleases. But we should be prepared to resist the flood of propaganda which is coming, from various sources, and sponsored by social theorists."

The first of these efforts to appear, according to the Journal, is a recently published book on the subject of health insurance by Dr. I. S. Falk, health consultant to President Roosevelt's Committee on Social Security.

"That not one country which has tried health insurance has given it up, is not unequivocal," the Journal will state. "Under health insurance schemes as they work out in Europe, the lay personnel exceeds the medical in ratios of from three to five to one. Grover Cleveland invented a phrase which applies here: 'The cohesive force of public plunder.'"

"Is it conceivable that a machine, numbering many thousands, the majority of whom would be non-medical, could anywhere so far forget self-interest—interest in the payroll—to take steps to abolish their political jobs? Anyone who thinks will know why no country, once having established this kind of political bureaucracy, could ever break away from it.

"The campaign of 'adult education' has only started. We seem to see the ripple on the calm water which precedes the wind which will soon be upon us. Time to make everything snug and prepare to ride it out."

LET THE GOVERNMENT DO THIS: THE PEOPLE WILL ASSUREDLY DO THE REST

To be a great historian involves being more or less of a prophet. Thomas Babington Macaulay, one of the greatest of Englishmen with this inner vision wrote a century ago that:

"Our Rulers will Best Promote the Improvement of the People by Strictly Confining Themselves to Their Own Legitimate Duties; by Leaving Capital to Find Its Most Lucrative Course; Commodities Their Fair Price; Industry and Intelligence Their Natural Reward, Idleness and Folly Their Natural Punishment; by Maintaining Peace, by Defending Property, by Diminishing the Price of Law and by Observing Strict Economy in Every Department of the State. *Let the government do this: the people will assuredly do the rest.*"

And again: "That is the best government which desires to make the people happy, and knows how to make them happy."

And yet again: "Nothing is so galling to a people, not broken in from birth, as a paternal or, in other words, a meddling government: a government which tells them what to read and say and eat and drink and wear."

Undoubtedly we are an unfortunate nation that Macaulay was not born in 1900 A. D. rather than 1800 A. D. and that he could not have run his appointed course of fifty-nine earthly years in this twentieth rather than that nineteenth century in which his sound sense, his phillipics, his ability to grasp the external angles of a situation made him such a monarch of mass thought. Were Macaulay alive today surely he would add to the paragraph above, "or its men of science how to dance like puppets at the end of strings held in the hands of a laity dominated by ignorance, demagogery, cheap politics and insane chimerical theories."

Undoubtedly, too, if Macaulay were writing as of current date he would make further addition of the sentiment:

"Let the lay boondogglers, foundations, socializers and wildfire meddlers leave the practice of medicine to medically trained men."

Macaulay is known to every schoolboy by his "Lays of Ancient Rome," which in heroic ballad form depict causes contributive to the rise and fall of that mighty empire. The nineteenth cen-

tury had its Macaulay, the twentieth century seems to have none. But perhaps the twentieth century, if the boondoggling flood is not impeded, will know a second Macaulay who will find fame and possibly fortune by penning "Lays of What Was Once the World's Greatest Democracy."

INFECTIVITY OF SPINAL FLUID IN LYMPHO-GRANULOMA INGUINALE

On the basis of their own clinical and experimental observations and of data available in the literature, Emmerich von Haam and Rigney D'Aunoy, New Orleans (*Journal A. M. A.*, May 9, 1936), conclude that there is much evidence at least suggestive of frequent generalized dissemination of the virus during the early stages of the disease. Coutts takes a similar point of view and even goes so far as to divide the disease into three distinct periods or stages similar to those noted during the evolution of syphilis. According to him, the time elapsing between infection and the appearance of the primary lesion must be regarded as the primary incubation period and may extend up to three weeks. This is followed by a secondary period characterized by the appearance of constitutional symptoms, inguinal buboes and occasionally generalized lymphadenitis, skin lesions, conjunctival lesions and anemia. Lesions of the tertiary period are elephantiasis of the genital organs, ulceration of the vulva (esthiomene) and rectal stricture. Although the authors are inclined to consider the conclusions of Coutts premature on the basis of the available clinical observations on the various manifestations of the disease, they cannot deny that such a concept may yet prove correct. Their successful demonstration of the virus in the spinal fluid of infected patents certainly proves that dissemination of the virus in the human body actually occurs. Study of the spinal fluid in a large number of cases alone will prove whether this reported observation must be regarded as the rule or as an exception during the course of the disease. Even should the latter prove true, the observations give a firmer basis to the incrimination of the virus as the causal agent of the cerebral manifestations occurring during the course of inguinal lymphogranuloma, as described in increasing frequency by continental workers.

INDUCED HYPERCALCEMIA: ITS POSSIBLE THERAPEUTIC RELATION TO THROMBOCYTOPENIC PURPURA

Harry Lowenburg, Sr., and Theodore M. Ginsburg, Philadelphia (*Journal A. M. A.*, May 23, 1936), observed a second case of acute hypercalcemia produced by intentional overdosage with parathyroid extract in a boy with thrombocytopenic purpura. Toxic symptoms occurring in man are similar to those reported by many workers as occurring in animals with experimental hypercalcemia. The earliest symptom is vomiting. This is shortly followed by weakness, apathy and lethargy. Both patients, once hypercalcemia was established, pre-

sented definite objective changes in the blood (bleeding time, clotting time, clot retraction, platelet count) as well as clinical cure. The treatment of thrombocytopenic purpura by the induction of artificial hypercalcemia by the use of large doses of parathyroid extract is at least worthy of trial. Calcium gluconate was used to protect the bones from the withdrawal of calcium from them into the blood. As compared with other forms of treatment, one would seem to have nothing to lose. On the assumption that the apparent cures were obtained as the result of the treatment administered, no explanation is apparent to account for the results.

POST-TRAUMATIC NARCOLEPSY

George W. Hall and George B. LeRoy, Chicago (*Journal A. M. A.*, Feb. 8, 1936), point out that early writers regarded the syndrome of somnolence and cataplexy as a neurosis, while more recent observers believe that actual pathologic changes are present. The majority of the post-traumatic cases have been reported since the war. It is questionable whether some cases are the sequel of trauma or of encephalitis. Osnato and Giliberti have shown how the diffuse parenchymatous degeneration of the brain following head injury may closely resemble the lesion of encephalitis, of whatever cause. They have also demonstrated a similarity in the symptomatology of the early stages of head injury and the early phases of an acute encephalitis and have shown statistically the frequency of somnolence in the two cases. The authors divide cases of narcolepsy into two groups. Group 1 includes those presenting diurnal attacks of sleep and cataplexy as described by Gélinau. The term true narcolepsy is therefore limited to this group. Group 2 includes cases presenting pathologic and paroxysmal attacks of somnolence only. The majority of the cases discussed by them are typified by the close relationship between the time of the head trauma and the onset of pathologic and paroxysmal attacks of diurnal sleep. The investigation of cases of post-traumatic narcolepsy renews interest in the etiology of the so-called idiopathic types of narcolepsy, for in the cases considered, the exciting cause is rather obvious and one can speculate with some degree of certainty on the changes in the brain. At the same time one cannot ignore the part that epidemic encephalitis or some other inflammatory disease of the thypothalamic region plays as a cause of narcolepsy, as it is an obvious fact, which must not be overlooked, that narcolepsy with cataplexy is rarely the sequel of head injury, which is a rather common accident.

DANGEROUS DAN M'CROBE

A bunch of germs were hitting it up
In the bronchial saloon;
Two bugs in the edge of the larynx
Were jazzing a ragtime tune.
Back in the teeth, in a solo game,
Sat dangerous Ack-Kerchoo;
And watching his pulse was his light of love,
The lady who's known as Flu.

—Sundial.

MEDICAL ECONOMICS

Frank L. Brown, M. D.
E. P. Coleman, M. D.
John R. Neal, M. D.
Ralph Peairs, M. D.
P. H. Kreuscher, M. D.
C. E. Wilkinson, M. D.

Edited by the Committee on Medical Economics
of the
Illinois State Medical Society
E. S. Hamilton, M. D., Chairman
Kankakee, Illinois

H. M. Camp, M. D.
R. L. Green, M. D.
I. H. Neece
R. K. Packard, M. D.
C. B. Reed, M. D.
C. S. Skaggs, M. D.

Address all letters and communications to the Chairman.

The return of the care of the poor to the township supervisor has resulted in renewed interest in the problem of how the medical care should be furnished. The old method of a township physician, who furnishes all care at either reduced fees or for a fixed salary, no longer satisfies either the recipients of the care, who have been accustomed to free choice of doctors under the Illinois Emergency Relief plan and desire to continue to enjoy that privilege, or to supervisor in charge, who is constantly importuned for some doctor, other than the regular one. Incidentally, the medical profession itself is not well pleased with this method, which it views with suspicion as a further advance of Socialized Medicine. As a result considerable interest has been shown in the so-called Waterloo plan of furnishing care for the indigent. This plan, first used in Waterloo, Iowa, from which its name was received, has been in use with great satisfaction, over twenty years. The plan has been in use in different cities and communities in Illinois with uniform satisfaction to all concerned for many years. An effort will be made to outline the plan as used successfully in one of the cities and then comment on the advantages and shortcomings of the plan.

The success of the plan is dependent on a cooperative medical society. Those men, who agree to furnish this service, are divided into groups, each of which should contain an oculist, a surgeon and as many general practitioners as are available and necessary to furnish adequate service to the indigent. These groups work either two or three months at a time and are then off the panel for the rest of the year. The secretary of the society furnishes the overseer of the poor a list of the men on the panel as well as a permanent list of all men in the plan. When an indigent presents itself for treatment, the overseer asks if he has any particular choice as to a doctor. If he has and that name is on the permanent list, the patient is sent to the phys-

ician of his choice. If he has no choice, he is assigned one of the men on the panel. The patient is then cared for exactly as a private patient, the physician using his best judgment as to number and frequency of treatments. Of course, it is fundamental that the service rendered must be of the highest grade and given cheerfully and promptly. The pay for the above service is usually on a flat monthly salary, and the money received is according to a contract entered into by the participating physicians and the supervisor. The money goes into the treasury of the medical group, to be spent as they see fit. More will be said about this later.

The contract entered into between the participating physicians and the supervisor provides for a fixed salary per month for the regular work with extra pay for surgery, major and minor, as well as for obstetrical work. The fees for the extra work are at a reduced rate about the same as that paid by the IERC. These fees also go into the treasury of the medical group, to be expended as they see fit. You will note that no money is handled by the individual physician. All bills are rendered by the secretary of the medical group and all moneys received are placed in the general fund.

A monthly report is made to the secretary of all services rendered by each individual member of the group and he uses these reports to determine the volume of work done under the contract, which can be adjusted to conditions according to the need of the indigent.

Service under this plan has been satisfactory to both the patients and the supervisor. The patients like it because they can get the physician of their choice and are not made to feel that they are on relief as they would feel when this choice is denied them. Supervisors like it for the same reason, choice of physician by the patient often makes the difference between a satisfied and dissatisfied client. In most places that the plan has been in operation the medical profession has

been well pleased. The more nearly the participation of the medical profession of the community is to 100 per cent the better the plan works and the less is the complaint. It is added proof of the well-known fact that the more we mingle with our medical brethren, the better we get along and the higher regard we have for him and his accomplishments. Frequent meetings, best non-scientific and more social, give an opportunity to know one another better and establish personal friendships, which are of great value to the medical profession.

The moneys received for the services so rendered are used in various ways in different places. In some a club room and library are maintained with facilities for meetings and social gatherings. In addition, the dues to the County Medical Society, subscriptions to the J. A. M. A., premiums on malpractice insurance policies and various other benefits to the individuals are paid as the society may agree upon.

The plan has been very successful in practically every community in which it has been tried and the fact it is so uniformly successful, makes it quite evident that the plan is of merit.

Further information as to the manner of conducting the plan can be obtained from the secretary of the society where the plan is in operation. Inquiry to the Chairman of this Committee will be promptly answered with the desired information.

The attention of the medical profession is directed to an article by President R. L. Green, of Peoria dealing with one of the problems of the medical profession. It is directly following this article and is worthy of your attention and thought.

E. S. HAMILTON,

Chairman Committee on Medical Economics.

COOPERATION

When handed the gavel at Springfield, I said in part our organization was like a ball team—no one man makes a team. One weak member can break it. When every one plays his part we will come out all right. The Society Security Act is a fact.

Dr. Jirka has assured us by word and deed he is more than friendly to our organization under the Act.

The Health Department will divide the State

up; then will follow programs for the health officer, nurse, clerk and sanitary engineer. This will be all right while Dr. Jirka remains at the head. When his officers decide to step up the program the Society members must cooperate.

Dr. Parran, the national head, has announced in *Survey Graphic* and *Readers Digest* that "Syphilis" will be his meat course.

Now the average doctor knows syphilis is a great economic loss. If treated early, over a long period of time, it can be cured. Your State Hospitals could be cut in two in ten years of intensive treatment of syphilis. It is not required of the health department to treat your case. It does require you to follow up the case. Tell your patient he may be treated anywhere in the world, by giving him a schedule to follow. Syphilis should be quarantined from travel or exposure until they have had the first course of arsphenamine, at least twelve doses of arsphenamine.

This is one of your economic problems. There is not a man practicing medicine in any of its branches that should not be on the look out for syphilis. It is a great mask for many other things. Do a few more tests on your cases as a matter of routine.

Your patient will appreciate your interest. You will keep the health department out of this field.

You can help cut your State hospitals in two in ten years. You say that's none of your business; well, you help pay the bill. If you could look at the volume report of Department of Welfare for the State of Illinois you would grasp some of the magnitude of this problem. It is ignoring these things that make the social worker want to put medical care on the free list.

Many cripples, delinquents, insane, to say nothing of mental cases outside institutional care, could have been prevented by giving enough care over long enough time.

Get behind this economic problem. Help the local society in their effort at immunization programs. Get in on your local parent-teacher program. No matter what your special line may be—for economics are knocking at the door.

If you do not help guide these movements, you will soon find health units doing it for you.

R. L. GREEN,

President Illinois State Medical Society.

EDUCATIONAL COMMITTEE

June-August, 1936

SPEAKERS BUREAU:

Few clubs hold regular meetings during the summer months, consequently the Committee received a limited number of requests for speakers. Representatives of the Illinois State Medical Society appeared before special meetings of the following:

American Legion Auxiliary—DeKalb

American Legion Auxiliary—Peoria

Douglas-Piatt County Home Bureau

Rotary Clubs

Olivet Institute—Chicago

Quarterly meeting District Rural County Nurses

Lions Club

Summer Round-Up and Health Chairmen Conference of Illinois Congress of Parents and Teachers

A suggested list of subjects for health programs for the coming year was mimeographed and sent to 650 different organizations in the state. Many requests for fall, winter and spring programs have been received and programs scheduled.

NEWSPAPERS

The Committee has furnished the *Chicago Daily News* and the *Tribune* with the Daily Pollen Count and stories on HAY FEVER have been features almost daily in the *Tribune*. The public has become interested in these daily reports as indicated by the many telephone calls which come to the office from hay fever sufferers. The pollen count is furnished by Dr. S. M. Feinberg and Mr. Durham of the Abbott Laboratories and is reported to the newspapers through the office of the Educational Committee.

Letters were sent to newspaper editors in Illinois asking if they would be interested in using the health column furnished by the Committee. Ten papers were added to our list to receive the material regularly, a few papers did not want to receive news items or any material from the Medical Society.

60—Health articles furnished newspapers using monthly service

943—Health articles furnished downstate newspapers

237—Health stories to Chicago and vicinity

36—Articles sent to Arkansas State Medical Society

5—Releases for Calumet Branch, C. M. S.

48—Releases Whiteside County Medical meeting

63—Hancock County releases

34—Bureau County releases

Libraries:

564—Health articles sent to Chicago libraries

1,008—Health articles sent to downstate libraries

Press articles written and approved as follows:

How are you going to spend your vacation

Camping

Learning to Swim

Cleanliness is next to Godliness

Summer follies

Hearing aids for the deafened

Does worry interfere with your digestion

Vitamins—2 articles

German measles

Athletics

Rabies

RADIO:

59—Radio programs were given during the three months over stations WAAF, WJJD, WBBM.

It has been evident for some time that the Committee should make these radio programs more vital, but just how this is going to be done has not yet been determined. In some cities the question and answer period has been acceptable.

During the summer we tried to build up our radio audience and thus maintain our standard with the radio stations. Each week we mimeographed about fifty postal cards for each speaker which he could send to his friends or patients. We found this valuable and we believe a legitimate means of giving publicity to the weekly broadcasts of the Illinois State Medical Society. Each speaker received the same number of cards and the form of announcement was the same each week—see following sample—

EDUCATIONAL COMMITTEE—ILLINOIS
STATE MEDICAL SOCIETY

Sponsors Radio Health Talks (Eastern Standard Time)

TUESDAYS:

10:00 A. M.—WJJD—Sept. 1.—Dr. Felix Jansey—"Foot Sore & Weary."

12:00 M.—WBBM—Sept. 1.—Dr. Arthur Byfield—"Getting Along with Your Heart."

3:15 P. M.—WAAF—Sept. 1.—Dr. J. S. Schriver—"Health Check Up For Children."

THURSDAYS:

10:00 A. M.—WJJD—Sept. 3.—Dr. H. E. Davis—"Why an X-ray Specialist."

FRIDAYS:

3:15 P. M.—WAAF—Sept 4—Dr. Kenneth K. Jones—"Pellagra."

YOU ARE INVITED TO LISTEN IN EACH WEEK!

MARSHALL FIELD & CO. ANNEX BUILDING
WINDOW DISPLAY:

The window display at the Marshall Field & Co. Annex Building has aroused interest. The first exhibit was on Fourth of July accidents and eye injuries, furnished by Doctors T. D. Allen and Glen Nethercut. The second exhibit loaned by the University of Illinois College of Medicine is a figure showing the circulatory system (this model was in the University's exhibit at the Century of Progress). When it is removed from the window it is to be set up in the employees rooms of the Retail Store where it will be viewed by approximately 9,000 employees.

Plans are now being made for exhibits on Cancer, Heart, Feet. It is the hope of the Committee to change the exhibit about every four weeks.

Marshall Field & Co. are donating this window to

the Medical Society and their own decorator is setting up the displays furnished by the Committee.

SOCIALIZED MEDICINE:

Copies of Dr. Reed's Presidential Address were mailed to libraries, presidents of women's clubs, medical libraries and others requesting material on the subject of state medicine.

A number of radio talks on medical economics were given during the summer.

Material on state medicine was sent to both laymen and physicians.

MISCELLANEOUS:

Doctors R. R. Ferguson and R. K. Packard have been invited to serve as Consultants to the Health Committee of the Illinois Congress of Parents and Teachers.

During the summer a letter was sent to the officers of county medical societies advising them that the Committee did not favor baby shows.

SERVICE TO COUNTY MEDICAL SOCIETIES:

- 215—Notices for Whiteside County Medical Society
- 40—Notices for Bureau County Medical Society
- 400—Notices for Hancock County Medical Society, honoring five physicians completing 50 years in practice of medicine.
- 279—Notices for Randolph County Medical Society
- 229—Notices for Henry County Medical Society
- 312—Notices for Lee County Medical Society

SCIENTIFIC SERVICE COMMITTEE:

12—Speakers were scheduled for the summer meetings of:

Bureau County—Dr. Gatwood—New Lamps For Old.

Randolph Co.—Dr. Lee O. Frech—Medical Economics.

McHenry Co.—Dr. C. L. Martin—Proctologic Problems of General Interest.

Christian Co.—Dr. George L. Musgrave—Nasal Accessory Sinuses.

McHenry Co.—Dr. W. B. Serbin—Pathology and Treatment of Procidencia of the Uterus.

Whiteside Co.—M. Herbert Barker—"Treatment of Hypertension with Special Reference to the Cyanates.

Hancock Co.—Dr. DeLee's talking movies on Forceps Delivery.

Hancock Co.—Dr. Clayton J. Lundy—The Heart—movies.

Hancock Co.—Dr. LeRoy H. Sloan—Significant Progress in Medical Diagnosis Applicable to Daily Practice.

Hancock Co.—Dr. George DeTarnowsky—Treatment of Low Back Pain.

McHenry Co.—Dr. Clifford Grulee—Care of Pre-mature Infants.

McHenry Co.—Dr. L. E. Hines—Present Knowledge of Endocardial Infections.

Publicity was given these meetings and notices mimeographed and addressed the members of the societies.

The Scientific Service Committee has added about fifty new names to its list of speakers available for medical society meetings. A copy of this list was sent to all secretaries and presidents of medical societies with a letter telling of the special clinical services available through this Committee.

A number of societies seem to have taken a new lease on life during the last few months and through the combined efforts of the Scientific Service and Educational Committees have had splendid programs with excellent attendance.

Respectfully submitted,

JEAN McARTHUR, Secretary.

INTERNATIONAL MEDICAL ASSEMBLY INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

ST. PAUL, MINN.

OCTOBER 12, 13, 14, 15, 16, 1936

Pre-Assembly Clinics, October 10

Post-Assembly Clinics, October 17

St. Paul Hospitals

Monday, October 12

8:00 A. M.

Diagnostic Clinic: "Coronary Thrombosis and Angina Pectoris." Dr. Fred M. Smith, Professor of Theory and Practice of Medicine, State University of Iowa College of Medicine, Iowa City, Iowa.

Diagnostic Clinic: "Diseases of the Thyroid Gland." Dr. Robert S. Dinsmore, Cleveland Clinic, Cleveland, Ohio.

Diagnostic Clinic: "Rheumatoid Arthritis." Dr. Russell L. Haden, Chief of Medical Division, Cleveland Clinic, Cleveland, Ohio.

Intermission for Review of Exhibits

Diagnostic Clinic: "Trigeminal Neuralgia." Dr. Francis C. Grant, Assistant Professor of Neurological Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "Pathologic Physiology of the Common Bile Duct and Its Relation to Disease of the Biliary Tract." Dr. Waltman Walters, Associate Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Noon Intermission

1:00 P. M.

Address: "Obstetric Hemorrhages and Their Treatment." Dr. Jennings C. Lutzenberg, Professor of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis, Minn.

Address: "Relation of the Endocrine Glands to Sterility." Dr. Emil Novak, Associate Professor of Obstetrics, University of Maryland School of Medicine, Baltimore, Md.

Address: "The Radical Cure of Malignant Tu-

mors of the Bladder." Dr. Hugh H. Young, Professor of Urology, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission for Review of Exhibits

Address: "Treatment of Diabetes During Surgical Emergencies." Dr. Herman O. Mosenthal, Professor of Clinical Medicine, New York Postgraduate Medical School, New York, N. Y.

Address: "Problems in the Diagnosis of Diabetes." Dr. Robert D. Lawrence, M.A., M.D., F.R.C.P., Physician to Kings College Hospital, Diabetic Department, London, England.

Address: "Neurological Surgery." Dr. Loyal Davis, Professor of Surgery, Northwestern University School of Medicine, Chicago, Illinois.

Dinner Intermission

7:00 P. M.

Address: "Endocrine Disorders in Childhood." Dr. Frederick W. Schlutz, Richard T. Crane Professor of Pediatrics, University of Chicago School of Medicine, Chicago, Ill.

Address: "Peritonitis." Dr. Frederick A. Collier, Professor of Surgery, University of Michigan Medical School, Ann Arbor, Mich.

Address: "Very Recent Advances in Medicine." Dr. Russell M. Wilder, Professor of Medicine, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Address: "Practical Points in Clinical Surgery." Dr. W. Wayne Babcock, Professor of Surgery and Clinical Surgery, Temple University School of Medicine, Philadelphia, Pa.

Address: "Intravenous Anesthesia." Dr. John S. Lundy, Professor of Anesthesia and Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Tuesday, October 13

8:00 A. M.

Diagnostic Clinic: "Clinical Nutritional Disease (Vitamin B Deficiency)." Dr. Andrew Almon Fletcher, University of Toronto Faculty of Medicine, Toronto, Canada.

Diagnostic Clinic: "Diagnosis and Treatment of Brain Tumors." Dr. Walter E. Dandy, Adjunct Professor of Neurological Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Diagnostic Clinic: "The Diagnosis of Bone Lesions." Dr. Dean D. Lewis, Professor of Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission for Review of Exhibits

Diagnostic Clinic: "Tumors of the Breast." Dr. John F. Erdmann, Attending Surgeon of the New York Postgraduate Hospital and Medical School, New York, N. Y.

Diagnostic Clinic: "The Psychobiology of the Peptic Ulcer Patient." Dr. George Draper, Associate Professor of Clinical Medicine, Columbia Uni-

versity College of Physicians and Surgeons, New York, N. Y.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "Treatment and Guidance of Patients with Damaged Hearts." Dr. David Riesman, Professor of Clinical Medicine and Professor of History of Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.; President, Inter-State Post Graduate Medical Association.

Address: "The Treatment of Endocervicitis." Dr. Walter T. Dannreuther, Professor of Clinical Gynecology, New York Postgraduate Medical School, New York, N. Y.

Address: "Diffuse Adenomatosis of the Colon." Dr. Fred W. Rankin, Lexington, Kentucky.

Intermission for Review of Exhibits

Address: (Subject to be supplied.) Dr. Francis J. Charteris, M.D., Ch.B., Professor of Materia Medica and Therapeutics, St. Andrews University School of Medicine, St. Andrews, Scotland.

Address: "Factors Frequently Overlooked in the Management of the Patient with Heart Disease." Dr. Charles A. Elliott, Professor of Medicine, Northwestern University School of Medicine, Chicago, Ill.

Address: "The Diagnosis of Intracranial Complications of Aural and Nasal Sinus Suppuration." Dr. Wells P. Eagleton, Oal., Newark, New Jersey.

Address: "Treatment of Acute and Chronic Mastoiditis." Dr. Matthew S. Ersner, Professor of Otolaryngology, Temple University School of Medicine, Philadelphia, Pa.

Dinner Intermission

7:00 P. M.

Address: "The Consideration and Management of Some of the More Common Congenital Deformities of the Rectum." Dr. Vernon C. David, Clinical Professor of Surgery, Rush Medical College, Chicago, Illinois.

Address: "The Diagnosis and Treatment of Tumors of the Bladder by Means of the Roentgen Rays." Dr. George E. Pfahler, Professor of Radiology, University of Pennsylvania Graduate School of Medicine, Philadelphia, Pa.

Address: "The Cerebral Regulation of Autonomic Function." Dr. John F. Fulton, Sterling Professor of Physiology, Yale University School of Medicine, New Haven, Conn.

Address: "Syphilis of the Heart and Blood Vessels." Dr. Maurice C. Pincoffs, Professor of Medicine, University of Maryland School of Medicine, Baltimore, Md.

Address: "The Management of Intestinal Obstructions." Dr. Owen H. Wangensteen, Professor of Surgery, University of Minnesota Medical School, Minneapolis, Minn.

Wednesday, October 14

8:00 A. M.

Diagnostic Clinic: "Paralyses in Children." Dr. Bronson Crothers, Assistant Professor of Pediatrics, Harvard University Medical School, Boston, Mass.

Diagnostic Clinic: "Carcinoma of the Stomach." Dr. Donald C. Balfour, Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Diagnostic Clinic: "Economic Advantages of Early Protected Weight-Bearing in Fractures of the Leg, Foot and Ankle." Dr. Fraser B. Gurd, McGill University Faculty of Medicine, Montreal, Canada.

Intermission for Review of Exhibits

Diagnostic Clinic: "Essential Hypertension." Dr. Alfred W. Adson, Professor of Neurosurgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn., and Dr. E. V. Allen, Assistant Professor of Medicine, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Diagnostic Clinic: "Bodily Type in Relation to Endocrine Function." Dr. Charles R. Stockard, Professor of Anatomy, Cornell University Medical College, New York, N. Y.

Noon Intermission

1:00 P. M.

Diagnostic Clinic: "The Nature and Management of Nephritis Edema." Dr. Louis H. Newburgh, Professor of Clinical Investigation in Internal Medicine, University of Michigan Medical School, Ann Arbor, Mich.

Address: "Circulatory Failure in Acute Infectious Diseases." Dr. William R. Williams, Professor of Clinical Medicine, Cornell University Medical College, New York, N. Y.

Address: "Genesis and Surgical Treatment of Essential Hypertension." Dr. George Crile, Cleveland Clinic, Cleveland, Ohio.

Intermission for Review of Exhibits

Address: "Relation of Diseases of the Sinuses to Organic Disease." Dr. Robert F. Ridpath, Professor of Laryngology and Rhinology, Temple University School of Medicine, Philadelphia, Pa.

Address: "Intrathoracic Goiter." Dr. Charles G. Heyd, Professor of Clinical Surgery, New York Postgraduate Medical School, New York, N. Y.

Address: "Non-Surgical Diseases of the Colon." Dr. Joseph W. Larimore, Associate Professor of Clinical Medicine, Washington University School of Medicine, St. Louis, Mo.

Address: "The Surgical Anatomy of the Anal Canal" (including methods of Treatment of Fistula-in-Ano). Dr. C. Naunton Morgan, F.R.C.S., Senior Assistant Surgeon to St. Mark's Hospital for diseases of the Rectum; Surgeon to the Hospital for Tropical Diseases; Casualty Surgeon to St. Bartholomew's Hospital, London, England.

ASSEMBLY DINNER

7:00 P. M.

Informal

For members of the profession, their ladies and friends.

Dr. David Riesman, Master of Ceremonies.

Presentation of Token of Appreciation to Dr. Charles H. Mayo and Dr. William J. Mayo, Rochester, Minnesota.

Addresses by eminent members of the profession and other distinguished citizens of the world.

Thursday, October 15

8:00 A. M.

Diagnostic Clinic: "The Relation of the Psychoses to Systemic Diseases." Dr. Earl D. Bond, Professor of Psychiatry, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "Indications for Surgery and the Surgical Treatment of Peptic Ulcer." Dr. Frank H. Lahey, Director of Surgery in the Lahey Clinic; Surgeon of the New England Baptist Hospital and New England Deaconess Hospital, Boston, Mass.

Diagnostic Clinic: "The Relation of Endocrine Glands to Circulatory Diseases." Dr. Leonard G. Rowntree, Director, Philadelphia Institute for Medical Research, Philadelphia, Pa.

Intermission for Review of Exhibits

Diagnostic Clinic: "Cryptorchidism." Dr. Hugh Cabot, Professor of Surgery, University of Minnesota Graduate School of Medicine, Rochester, Minn. (Mayo Clinic.)

Diagnostic Clinic: "The Relation of Lumbosacral Joint to Low Back Pain." Dr. Alan DeForest Smith, Clinical Professor of Orthopedic Surgery, Columbia University College of Physicians and Surgeons, New York, N. Y.

Noon Intermission

1:00 P. M.

Address: "Allergic Diseases." Dr. Robert A. Cooke, Assistant Professor of Clinical Medicine, Cornell University Medical College, New York, N. Y.

Address: "Significance of Menorrhagia and Metrorrhagia." Dr. John R. Fraser, Professor of Obstetrics and Gynecology, McGill University Faculty of Medicine, Montreal, Canada.

Address: (Subject to be supplied.) Dr. Charles H. Mayo, Mayo Clinic, Rochester, Minnesota.

Address: "Applications of Cavity Grafting." Mr. Archibald H. McIndoe, M. B., Ch. B. (N. Z.); M. Sc. (Path.); M. S., F. A. C. S.; F. R. C. S. (England), Assistant Plastic Surgeon, Plastic Unit, St. James's Hospital; Consulting Plastic Surgeon, Royal North Staffordshire Infirmary; Chief Assistant Plastic Surgery, St. Bartholomew's Hospital; Sen. Surgeon, Hospital for Tropical Diseases, London, England.

Intermission for Review of Exhibits

Address: "Function and Deformity in Fracture Results." Dr. Eldridge L. Eliason, Professor of Clinical Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Address: "The Early Diagnosis of Bronchiogenic Carcinoma." Dr. Chevalier Jackson, Professor of Bronchoscopy and Esophagoscopy, Temple University School of Medicine and Dr. Chevalier L. Jackson, Professor of Clinical Bronchoscopy and Esophagoscopy, Temple University School of Medicine, Philadelphia, Pa.

Address: "Water Balance in Children." Dr. Samuel Z. Levine, Acting Professor of Pediatrics, Cornell University Medical College, New York, N. Y.

Address: "The Surgery of Acute and Chronic Compression of the Heart." Dr. Claude S. Beck, Associate Professor of Surgery, Western Reserve University School of Medicine, Cleveland, Ohio.

Dinner Intermission

7:00 P. M.

Address: "Ophthalmic Consultations in a General Hospital." The Joseph Schneider Foundation Presentation. Dr. Lawrence T. Post, Professor of Ophthalmology, Washington University School of Medicine, St. Louis, Mo.

Address: "General Therapeutic Methods for the Protection of Patients in the Extremes of Life." Dr. Irving S. Cutter, Dean and Associate Professor of Medicine, Northwestern University Medical School, Chicago, Ill.

Address: "Periodic Health Examination." Dr. Reginald Fitz, Associate Professor of Medicine, Harvard University Medical School, Boston, Mass.

Address: "The Diagnostic Significance of the Respiratory Rate." Dr. Frederick J. Kalteyer, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia, Pa.

Address: "The Sella Turcica." Dr. Eric Oldberg, Professor of Neurology and Neurological Surgery, University of Illinois College of Medicine, Chicago, Ill.

Friday, October 16

8:00 A. M.

Diagnostic Clinic: "The Differential Diagnosis of Pain in the Chest." Dr. John A. Oille, Assistant Professor of Medicine, University of Toronto Faculty of Medicine, Toronto, Canada.

Diagnostic Clinic: "Fracture of the Neck of the Femur: The Problem Fracture." Dr. John J. Moorhead, Professor of Clinical Surgery, New York Postgraduate Medical School, New York, N. Y.

Diagnostic Clinic: "Protamine Insulin." Dr. Elliott P. Joslin, Clinical Professor of Medicine, Harvard University Medical School, Boston, Mass. and Dr. Priscilla White, Boston, Mass.

Intermission for Review of Exhibits

Diagnostic Clinic: "Review of Operative and Non-operative Treatment of Prostatic Obstruction."

Dr. William E. Lower, Cleveland Clinic, Cleveland, Ohio.

Address: "The Differential Diagnosis of Chills and Fever." Dr. James H. Means, Jackson Professor of Clinical Medicine, Harvard University Medical School, Boston, Mass.

Noon Intermission

1:00 P. M.

Address: "Diabetes Insipidus." Dr. Elliott C. Cutler, Moseley Professor of Surgery, Harvard University Medical School, Boston, Mass.

Address: "Treatment of the Elderly Chronic Cardiac." Dr. Cary Eggleston, Assistant Professor of Clinical Medicine, Cornell University Medical College, New York, N. Y.

Address: (Subject to be supplied.) Dr. William J. Mayo, Mayo Clinic, Rochester, Minn.

Intermission for Review of Exhibits

Address: "The Applied Physiology of the Sphincter of Oddi." Dr. Andrew C. Ivy, David Professor of Physiology and Professor of Pharmacology, Northwestern University Medical School, Chicago, Ill.

Address: "The Acute Abdomen." Dr. Irvin Abell, Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.

Address: "The Role of the Practitioner and the Specialist in the Management of Urinary Tuberculosis." Dr. Joseph F. McCarthy, Professor of Clinical Urology, New York Postgraduate Medical School, New York, N. Y.

THE MISSISSIPPI VALLEY SANATORIUM ASSOCIATION

PEORIA, ILLINOIS

Hotel Pere Marquette

September 24, 25, 26, 1936

President Dr. John W. Towey
Vice-President..... Dr. Walter C. Reineking
Secretary-Treasurer Dr. D. O. N. Lindberg

X-RAY EXHIBITS

A. Silicosis and Silico-Tuberculosis. Dr. Oscar A. Sander, Milwaukee, Wisconsin.

B. Pulmonary Basal Lesions. Dr. C. C. Birkelo, Roentgenologist, Herman Kiefer Hospital and William H. Maybury Sanatorium, Detroit, Mich.

C. Technical Considerations of the Chest Roentgenogram. Macon County Tuberculosis Sanatorium, Decatur, Illinois, Assisted by Consultation Service, National Tuberculosis Association.

Thursday Morning, September 24, 1936

Dr. John W. Towey, President, Mississippi Valley Sanatorium Association, Powers, Mich., presiding.

9:00 a. m.—Bronchoscopic Observations of Tracheobronchial Obstructions in Tuberculosis. Dr. Warren Wadsworth, Herman Kiefer Hospital, Detroit, Mich.

9:30 a. m.—Bronchiectasis Associated with Tuberculosis. Dr. S. S. Cohen and Dr. Kenneth Phelps, Glen Lake Sanatorium, Oak Terrace, Minn.

10:00 a. m.—Some Pathological Features of Broncho-

genic Carcinoma. Dr. Carl V. Weller, University of Michigan, Ann Arbor, Mich.

10:20 a. m.—Recess.

10:30 a. m.—Pathologico-Roentgenological Demonstration. Dr. Henry S. Willis, Superintendent, Wm. H. Maybury Sanatorium, Northville, Mich., Correlator. (Gross section study will be made of tuberculous lungs and correlative study will be made with x-ray films.) *Clinical*—Dr. J. J. Singer, St. Louis, Mo.; Dr. Frank L. Jennings, Glen Lake Sanatorium, Oak Terrace, Minn.; Dr. Oscar Lotz, Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis.; Dr. Turner, Chicago, Ill. *Pathological*—Dr. Wm. L. Brosium, Detroit, Mich.; Dr. S. A. Levinson, Associate Professor of Pathology and Associate Professor of Medicine, University of Illinois College of Medicine, Chicago, Ill.

12:00 noon—Appointment of Nominating Committee.

Thursday Afternoon, September 24, 1936

Dr. Walter C. Reineking, Vice-President, Mississippi Valley Sanatorium Association, Madison, Wis., presiding.

Symposium: PULMONARY LESIONS OF NON-TUBERCULOUS CHARACTER

2:15 p. m.—(a). Bronchosisinuitis. Dr. Ferris Smith, Grand Rapids, Mich.

2:45 p. m.—(b). Some Aspects of Mediastinal Lesions. Dr. J. J. Singer, St. Louis, Mo.

3:15 p. m.—(c). Lobectomy in the Treatment of Basal Pulmonary Lesions. Dr. Cameron Haight, University Hospital, Ann Arbor, Mich.

3:45 p. m.—(d). The Differential Diagnosis of Sili-cosis and Silico-Tuberculosis. Dr. Oscar A. Sander, Milwaukee, Wis.

4:15 p. m.—Report of Nominating Committee and Election of Officers.

Evening Session, September 25, 1936

7:30 p. m.—X-Ray clinic. Conducted by Dr. Ken-non Dunham and Dr. V. V. Norton, Hamilton County Tuberculosis Sanatorium, Cincinnati, Ohio.

Friday Morning, September 25, 1936

Dr. Robinson Bosworth, President, Illinois Tuberculosis Association, Rockford, Ill., presiding, Joint Session of Sanatorium Association and Tuberculosis Conference.

9:00 a. m.—Opportunities for Finding Tuberculosis in Relief Families. Dr. A. A. Pleyte and Metta Bean, Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis.

9:30 a. m.—The Role of the Sanatorium in the Control Program. Dr. Robinson Bosworth, Rockford Municipal Tuberculosis Sanatorium, Rockford, Ill.

10:00 a. m.—Some Considerations of the Latent Period Between Infection and So-Called Adult Disease as Occurring in Childhood up to Adolescence. Dr. J. A. Myers, University of Minnesota, Minneapolis, Minn.

10:45 a. m.—Pulmonary Tuberculosis in Childhood. Dr. Allen K. Krause, Desert Sanatorium, Tucson, Ariz.

11:30 a. m.—Discussion.

Evening Session, September 24, 1936

BANQUET

Address. Dr. Henry Boswell, Sanatorium, Miss.

THE AMERICAN BOARD OF INTERNAL MEDICINE (INC.)

The American Board of Internal Medicine, incorporated February 28, 1936, completed its organization on June 15, 1936. The officers chosen were Walter L. Bier-ring, M. D., Des Moines, Chairman; Jonathan C. Meakins, M. D., Montreal, Vice-Chairman; and O. H. Perry Pepper, M. D., Philadelphia, Secretary-Treasurer. These officers with the following six members constitute the present membership of the board: David P. Barr, M. D., St. Louis; Reginald Fitz, M. D., Boston; Ernest E. Irons, M. D., Chicago; William S. Middleton, M. D., Madison; John H. Musser, M. D., New Orleans, and G. Gill Richards, M. D., Salt Lake City.

The term of office of each member will be three years, and no member can serve more than two consecutive three year terms.

The organization of the Board is the result of effective effort on the part of the American College of Physicians in conjunction with the Section on Practice of Medicine of the American Medical Association and these two organizations are represented in the membership of the Board on a five to four ratio respectively.

The American Board of Internal Medicine had previously received the official approval of the two bodies fostering its organization, as well as that of the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

The purpose of the Board will be the certification of specialists in the field of internal medicine, and the establishment of qualifications with the required examination procedure for such certification.

While the Board is at present chiefly concerned with the qualification and procedure for certification in the general field of internal medicine, it is intended to inaugurate immediately after July 1, 1937, similar qualification and procedure for additional certification in certain of the more restricted and specialized branches of internal medicine, as gastroenterology, cardiology, metabolic diseases, tuberculosis, allergic diseases, et cetera. Such special certification will be considered only for candidates who have passed at least the written examination required for certification in general internal medicine. The operation of such a plan will require the active participation of co-operation of recognized representatives from each of such special fields of medicine.

Each applicant for admission to the examination in internal medicine will be required to meet the following standards:

General Qualifications:

1. Satisfactory moral and ethical standing in the profession.
2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies will not be required.

Professional Standing:

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
2. Completion of an internship of not less than one year in a hospital approved by the same council.
3. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

Special Training:

1. Five years must elapse after completion of a year's internship in a hospital approved for interne training before the candidate is eligible for examination.
2. Three years of this period must be devoted to special training in internal medicine. This requirement should include a period of at least several months of graduate work under proper supervision in anatomy, physiology, biochemistry, pathology, bacteriology, or pharmacology, particularly as related to the practice of internal medicine.

This work may be carried on in any domestic or foreign medical school or laboratory recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate experience; or it may include a period of at least several months of graduate work under proper supervision in internal medicine or in its restricted and specialized branches in any domestic or foreign hospital, clinic, or dispensary, recognized by the above Council as offering appropriate facilities for this type of postgraduate experience.

3. A period of not less than two years of special practice in the field of internal medicine or in its more restricted and specialized branches.

The American Board of Internal Medicine does not propose to establish fixed rules for the preliminary training of candidates for certification in this field. Broad general principles for training, however, may be outlined, although such suggestions as are made must, of necessity, be subject to constant changes reflecting the dynamic nature of the specialty.

A sound knowledge of physiology, biochemistry, pharmacology, anatomy, bacteriology, and pathology, in so far as they apply to disease is regarded as essential for continued progress of the individual who practices internal medicine. The mere factual knowledge of medicine and its basic sciences is not sufficient. The candidate must have had training in their use in furthering his understanding of clinical medicine. This implies practical experience under the guidance of older men who bring to their clinical problems ripe knowl-

edge and critical judgment. Preparation to meet this requirement adequately may be even more difficult to obtain than the so-called scientific training. It may, however, be acquired in the following ways:

- (a) By work in a well-organized hospital outdoor clinic conducted by competent physicians.
 - (b) By a prolonged period of resident hospital appointments likewise directed by skilled physicians.
 - (c) By a period of training in intimate association with a well-trained and critical physician who has taken the trouble to teach and guide his assistant rather than to require him only to carry out the minor drudgery of a busy practice.
4. The Board does not consider it to the best interests of internal medicine in this country that rigid rules as to where or how the training outlined above is to be obtained. Medical teaching and knowledge are international. The opportunities of all prospective candidates are not the same. Some may have the opportunity of widening their knowledge by a period of study abroad. Others, at the other extreme, may be restricted to a comparatively narrow geographic area and their detailed training must be obtained in short periods scattered over a long time. Although it is laid down that at least five years must elapse between the termination of the first interne year and the time when the candidate is eligible to take the examination, a longer period is advisable. The Board wishes to emphasize that the time and training are but means to an end of acquiring a broadness and depth of knowledge of internal medicine which the candidate must demonstrate to the Board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge as best he may rests with the candidate, while the responsibility of maintaining the standard of knowledge required for certification devolves on the Board.

Method of Examination:

The examination required of candidates for certification as specialties in Internal Medicine will comprise, Part I (written) and Part II (practical or clinical).

Part I. The written examination is to be held simultaneously in different sections of the United States and Canada and will include:

- (a) Questions in applied physiology, physiological chemistry, pathology, pharmacology, and the cultural aspects of medicine.
- (b) Questions in general internal medicine.

The first written examination will be held in December, 1936, and candidates successful in this written test will be eligible for the first practical or clinical examination which will be conducted by members of the Board near the time for the annual session of the American College of Physicians at St. Louis in April, 1937. The second practical examination will be held at Philadelphia near the time of the annual session of

the American Medical Association in Atlantic City in June, 1937.

The fee for examination is forty dollars which must accompany the application and an additional fee of ten dollars is required when the certificate is issued.

Application blanks and further information can be obtained by addressing the office of the chairman, Walter L. Bierring, M. D., 406 Sixth Avenue, Des Moines, Iowa, U. S. A.

ANNUAL MEETING OF THE MISSISSIPPI VALLEY MEDICAL SOCIETY

The Second annual meeting of the MISSISSIPPI VALLEY MEDICAL SOCIETY will be held at Burlington, Iowa, Sept. 30, Oct. 1-2. The entire meeting, including the technical and scientific exhibits, will be held on the mezzanine floor of the modern, 300-room Hotel Burlington. There will be morning, afternoon and evening sessions and the complete program has been especially arranged to appeal to the general practitioner.

Among the eminent clinicians who will address the meeting are:

Donald C. Balfour, M. D., LL.D., F. A. C. S., Rochester, Prof. of Surgery, U. of Minn. Graduate S. of M.; Chief Surg., Mayo Clinic.

Arthur Jos. Barsky, D. D. S., M. D., New York City, Adj. Prof. of Plastic Surgery, New York Polyclinic M. S. and Hospital.

George Crile, M. D., LL.D., F. A. C. S., Cleveland, Director Cleveland Clinic Foundation.

Frederick H. Falls, M. S., M. D., F. A. C. S., Chicago, Prof. & Head of Dept. Obstetrics & Gynecology, U. of Ill. College of Med.

Melvin S. Henderson, M. D., F. A. C. S., Rochester, Prof. of Orthopedic Surgery, Univ. of Minn. Graduate School of Medicine.

Richard H. Jaffe, M. S., M. D., Chicago, Prof. of Pathology, Univ. of Chicago & Univ. of Ill. College of Medicine.

Ralph A. Kinsella, A. M., M. D., F. A. C. P., St. Louis, Prof. & Head of Dept. Medicine, St. Louis University School of Medicine.

Raymond W. McNealy, M. D., F. A. C. S., Chicago, Assoc. Prof. of Surgery, Northwestern University Medical School.

Bela Schick, M. D., New York City, Formerly Prof. of Pediatrics, University of Vienna.

Arthur Steindler, M. D., F. A. C. S., Iowa City, Prof. & Head of Dept. Orthopedic Surgery, State Univ. of Iowa, Col. of M.

These men will each give two practical lectures or clinical demonstrations and will be assisted by thirty-three specialists from Illinois, Missouri and Iowa who will conduct a clinical lecture course.

At the annual Banquet on Thursday evening October 1, the following will address the meeting: Dr. Rolland L. Green, Peoria, President of the Illinois Medical Society; Dr. Ross A. Woolsey, St. Louis, President of the Missouri State Medical Assn.; Dr. Prince E. Sawyer, Sioux City, President, Iowa State Medical

Society; Rev. Alphonse M. Schwitalla, St. Louis, Dean of St. Louis University School of Medicine and Dr. Bela Schick, of New York City, Discoverer of the "Schick Test."

There will be over sixty lectures, demonstrations, etc., for the full three day session. All ethical physicians are cordially invited to attend. A detailed program may be obtained from Harold Swanberg, M. D., Secretary-Treasurer, 211-224 W. C. U. Building, Quincy, Illinois.

RESOLUTION ON INSURANCE MEDICAL DIRECTORIES

Adopted by the Arkansas Medical Society, April 29, 1936. Presented to the House of Delegates of the American Medical Association May 11; approved by the Judicial Council May 14 and adopted by the House of Delegates of the American Medical Association May 14, 1936.

WHEREAS, certain commercial interests are publishing medical directories, listing physicians by specialty and otherwise, as available for insurance and compensation work, and other professional services, and

WHEREAS, participation by listing in these lay publications merely serves for the profit of the promoters, and is furthermore technically indirect solicitation of patients,

Therefore Be It Resolved, That the Arkansas Medical Society condemns these practices as unethical and forbids its members to continue listing their names in such directories, and

Be It Further Resolved, That the Arkansas Medical Society requests the House of Delegates of the American Medical Association to take similar action."

INSURANCE MEDICAL DIRECTORIES

The attention of our members has been previously called to the activities of these directory publishers. As is often the case, individual physicians felt that they might incur a loss if they removed their names from such directories while other members retained their listing. With this thought in mind, the above resolution has been adopted. The practice of so listing is declared unethical; no individual member may now feel that should he remove his name that another physician will accept that listing. The benefit is direct to these physicians in the fees saved; the loss is entirely the promoters.

Some idea of the financial gains involved in the publication of these directories may be understood when we state that one directory now on our desk contains the names of approximately 5,000 physicians. Ninety-two Arkansas physicians are listed in the three directories available to THE JOURNAL. The fee charged for listing in this one directory is \$15.00 per annum. A liberal estimate of the cost of publication and distribution is \$15,000. The balance, \$60,000; is presumably divided between the promoter and his solicitors. Verily, a most altruistic motive prompts the publication.

THE DEATH OF SIR HENRY WELLCOME

Sir Henry Wellcome of the well-known firm of Burroughs-Wellcome and Company, manufacturers of fine chemicals died in his 83rd year in London, on July 25th.

Born in 1853 in a log cabin near Almond, Wisconsin, about 125 miles from Milwaukee, he was the son of an itinerant missionary, the Rev. S. C. Wellcome who with his wife, Mary Curtis Wellcome, travelled in a covered wagon in Wisconsin and Minnesota and preached among the Indian settlements.

As a boy of six Sir Henry assisted his uncle, Dr. J. W. B. Wellcome by holding a basin while the wounds were being dressed of Minnesota pioneers who had been in battle with the Indians.

At an early age he began his career as a pharmacist in Rochester, Minnesota, where he worked from 1868 to 1871. It was there that he came under the notice of Dr. William Worrall Mayo, father of Dr. William J. Mayo and Dr. Charles H. Mayo, founders of the internationally famous Mayo Clinic. Sir Henry was a boyhood friend of the Mayo brothers, and this friendship was continued during his life.

EXAMINATIONS FOR APPOINTMENT IN THE MEDICAL CORPS OF THE UNITED STATES NAVY

Competitive examinations for appointment in the Medical Corps of the Navy are held from time to time for graduates of Class "A" Medical schools.

The requirements for appointment in the Medical Corps of the United States Navy provide that the candidate be a citizen of the United States, between 21 and 32 years of age at the time of appointment; that he be a graduate of a Class "A" medical school, and have completed a general internship of at least one year in a hospital accredited for internes by the American Medical Association and the American College of Surgeons. The internship required need not be "rotating." A medical, surgical, or other specialized internship will be accepted if of satisfactory character. He is required to pass a physical and professional examination. The professional examination embraces Anatomy (Surgical), Physiology, Bio-chemistry, Pathology, Bacteriology and Immunology, Pharmacology and Materia Medica, Medicine, Surgery, Obstetrics and Gynecology, Public Health, and Medical Jurisprudence.

The physical examination is thorough, and the candidate is required to certify that he is free from all mental, physical, and constitutional defects.

If the candidate is found to be physically disqualified, his examination is concluded. The physical requirements for candidates comprise the following: Height, between 66 and 76 inches inclusive; robust physique and development; weight, to be proportionate to the age and height group; hearing, normal; acuity of vision, not less than 12/20 in each eye unaided by glasses and capable of correction by the aid of lenses to 20/20; color perception, normal; teeth, not less than 20 vital teeth, of which there must be 4 opposed incisors and 4 opposed molars.

Formal application (in duplicate) should be forwarded to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., at least one month in advance of the date set for the examination. Examination will be conducted only at the Naval Medical School, Washington, D. C., the Naval Hospital, Great Lakes, Illinois, and the Naval Hospital, Mare Island (San Francisco), California. Approximately ten days will be required for the examination.

The application shall be accompanied by the following certificates:

(a) Letters or certificates from two or more persons of good repute, testifying from personal knowledge to good habits and moral character.

(b) Satisfactory evidence as to citizenship and age. Any one of the following may be considered as satisfactory proof of citizenship:

If native born—(1) A duly verified copy of a public or church record of birth; (2) affidavit, under oath, of the physician, midwife, or other person present at the birth; (3) in cases where neither (1) or (2) can be obtained by the candidate, the affidavit of either parent; (4) in cases where the candidate certifies that no one of the above is obtainable, the affidavits (under oath) of two reputable citizens acquainted with him. Each of these affidavits should state the facts within the knowledge of the deponent upon which he bases his statement as to citizenship of the candidate; as for example, that he has known the candidate since birth, that he knew his parents, or that he knew him to be a bona fide voter, as the case may be. If foreign born—(1) Certificate of naturalization, under the seal of the court by which naturalized; (2) certificate of parent during the minority of the candidate, together with the affidavit of a parent that the candidate is the child of the parent whose certificate of naturalization is submitted; (3) in special cases where the candidate certifies that neither (1) nor (2) is obtainable, the affidavits of two reputable citizens acquainted with him. As every naturalization is a matter of record in some court, these affidavits will be accepted only in very exceptional cases and on the understanding that the candidate will later submit a proper certificate of naturalization.

(c) Certificate of graduation in medicine.

(d) Certificate of internship from a civilian hospital.

(e) A recent photograph (size preferably 5 by 6).

(f) If the candidate has had special hospital service or special education or professional advantages, certificate to this effect, signed by the proper authority, should be forwarded.

The candidate will save unnecessary correspondence and delay if he will make sure that the necessary credentials, enumerated above, accompany his application.

If the credentials of the candidate are found satisfactory, the Bureau of Medicine and Surgery will recommend that a permit be issued to the candidate to appear before a board of medical examiners and naval examining board for physical and professional exami-

nation. The candidate's credentials will not be returned to him.

Immediately upon accepting a commission as lieutenant (junior grade) in the Medical Corps of the Navy, the officer receives compensation of \$2,699 per year if he has no dependents, and \$3,158 per year if he has dependents. A cash allowance at the rate of 8 cents per mile is allowed the newly appointed officer for travel to his first station of duty. No allowance is made for dependents or transportation of household effects of an officer going to his first duty. No allowance will be made for the expenses of candidates appearing for examination. When traveling under orders, by other than Government conveyance, officers of the Navy receive 8 cents a mile to defray the expenses of such travel performed from point to point within the United States, and when so traveling abroad are allowed actual personal expenses, estimated on a basis varying with the rank of the officer, both as regards admissible items of expense and the cost of such items. In case of a permanent change of station, transportation for wife, dependent children, and household effects is furnished.

Newly appointed medical officers will be ordered to duty at a Naval Hospital pending assignment to duty in attendance upon a course of instruction at the Naval Medical School, Washington, D. C. This course begins annually on September 15 and lasts 6½ months. Upon completion of the course, officers will be eligible for sea duty.

After officers have been in the service a sufficient length of time to assure the Bureau of their remaining in the service, have become thoroughly familiar with the duties of a naval medical officer, and have demonstrated their professional qualifications, special courses may be authorized at various hospitals and teaching institution to enable the officer to specialize along lines of his choice. Such specialization, however, must be in addition to and not exclusive of the general duties of a medical officer of the Navy.

Officers of the Medical Corps of the Navy are retired from active service at the age of 64 years, and when so retired (or when retired from active service for disability contracted in the line of duty before that age) receives an annual pay for life amounting to three-fourths of the base pay of their grade at the time of retirement.

Medical officers are eligible for promotion under such provisions of law as may be in effect at the time. Increases in compensation are governed both by rank and length of service. For each promotion a physical and professional examination are required.

For further information or application blanks address the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Examinations for the Medical Corps, U. S. Navy, will be held December 1, 1936 and in the latter part of May or early June 1937 at the following named places:

- (1) U. S. Naval Hospital, Great Lakes, Illinois.
- (2) U. S. Naval Medical School, Washington, D. C., and

(3) U. S. Naval Hospital, Mare Island (near San Francisco), California.

It is expected there will be about 25 vacancies available for the first examination.

RATS RESPONSIBLE FOR THE SPREAD OF VARIOUS DISEASES

The following data is being sent out by our local Health Department in the effort to exterminate the rat menace:

A few centuries ago many European and Asiatic countries were devastated by Bubonic Plague, called the "Black Death." Millions of people died. Many people have the mistaken belief that this deadly disease does not exist in the United States. The United States Public Health Service reported the presence of Bubonic Plague in California and now they report its recent spread eastward into the state of Montana. If the further spread of this fearful disease is not promptly checked before it reaches large centers of population its toll will be serious.

This disease is spread by rates and other rodents. Every citizen should realize that the brown rat is very common everywhere in Chicago. These public enemies are ferocious and often attack and bite human beings, particularly little children.

They breed rapidly. They are bold, and are very resistant to weather and disease. They adapt themselves to a wide range of conditions. They destroy millions of dollars worth of food, material and property every year in Chicago. They start many disastrous fires. Rats are filthy, dangerous creatures, and are enemies of man. They serve no known useful purpose, and should be destroyed.

Food and shelter are as essential to rates as to other animals. Well fed rats mature quickly and breed three, four or more times a year and produce from 6 to 17 young in a litter. Females breed when only 4 or 5 months old. Combating the inroads of this dangerous pest requires:

1. Their destruction.
2. Elimination of their feeding and breeding places.

Protect all food from rats. Keep premises clean. Remove accumulations of useless waste material. Pile all needed lumber and material 18 inches above yard or floor levels. Store all garbage in tightly covered impervious containers. Make all buildings, sheds, barns, and coops rat-proof. Fill or seal all rat holes. Organize Rat Eradication campaigns in your community. This is very important for permanent value. The few rats that are bound to escape death during this campaign will quickly repopulate a community unless YOU continue the effective systematic warfare against rats started by this project. Those who do not care to do the exterminating themselves may call upon experienced commercial exterminators, both for temporary and permanent measures.

The bait we are using in this campaign consists of one part red squill to ten parts oatmeal and cornmeal flour, thoroughly mixed. Enough water is added to give it a doughy feel. A few drops of anise oil is also

added to grain mixtures to make the bait more attractive to rats. Papers are cut into four inch squares and a portion of the bait (about the size of a marble) is placed in each of these squares and wrapped similar to candy kisses.

The bait is placed where evidence reveals that rats abound. It is relatively harmless to domestic animals.

We are also using dry bread saturated with red squill extract as bait.

Other very effective raticides are available at many dealers under various trade names. (Their names and addresses may be procured from the telephone directory under the classification "Exterminating.")

BALANCED MEALS TO INCREASE LIFE SPAN

Protective foods should be included in the menu of every man. These foods are particularly rich in vitamins, and you need vitamins to remain in health. The protective foods include leafy vegetables, fruits and milk. Medical and scientific studies have demonstrated that their use aids in warding off disease, and so help to increase the life span.

Leafy vegetables include lettuce, romaine, spinach, kale, cabbage, cauliflower, dandelion greens, turnip and beet tops, celery and endive. Besides these, although not leafy vegetables, string beans and tomatoes are rich in protective substances. Every full meal should include two cooked vegetables as well as a vegetable salad, the latter preferably of raw vegetables such as lettuce, tomatoes, celery and carrots.

Oranges, grapefruit and lemon, in other words, the citrus fruits; bananas, apples, apricots, grapes, plums, pears, canteloupes, figs, pomegranates are rich in vitamins, especially vitamin C, and should be eaten freely.

Every man should drink at least a pint of milk every day, for milk is the most nearly perfect food known. Dairy products, cheese and butter, also are fine for health. Both milk and cheese are rich in calcium, a mineral which the body must have.—*Health News Service*.

NEW ARSENICAL IN TREATMENT OF SYPHILIS AND TRYPA NOSOMIASIS

W. Yorke and F. Murgatoyd, in collaboration with F. Glyn-Hughes, M. O. Lester and A. O. F. Ross in the *British Medical Journal*, London, May 23, 1936, and abstracted by the A. M. A. as follows:

As a result of examining the trypanocidal activity of a large number of arsenical products, Yorke and Murgatoyd selected sodium succinylmethylamide-*p*-arsonate for detailed therapeutic trial. In experiments on laboratory animals this compound compared favorably with tryparsamide in that it was found to be rather less toxic and of somewhat greater trypanocidal activity than the latter drug. In man it was well tolerated in weekly amounts of from 2 to 4 Gm. The usual course consisted of the administration of this amount weekly until a total quantity of from 30 to 36 Gm. had been given. A number of patients had several such courses, the total quantity ranging from 66 to 141 Gm., while one patient had an uninterrupted course of 69 Gm.,

without showing any toxic signs. Apart from occasional nausea and vomiting, the only toxic signs observed were mild arsenical dermatitis in two patients and temporary jaundice in three advanced cases of neurosyphilis after prolonged courses of the drug. Visual disturbances have not been encountered. The drug exhibited the stimulating action associated with tryparsamide and other pentavalent aromatic arsenicals. In contrast with tryparsamide, the new drug exerts a definite action in primary, secondary and tertiary syphilis. In primary syphilis it alone is inadequate since, although the lesion cleared up rapidly, secondary manifestations developed subsequently. When it was combined with bismuth, the effects on primary syphilis seemed to be more permanent, and so far none of the patients treated in this way have relapsed. It has a definite action on tertiary manifestations of syphilis: the lesions disappeared completely in twenty of twenty-five cases. In early neurosyphilis and in tabes it gave satisfactory results. Of eleven patients with Nigerian sleeping sickness treated by a single course, ten became clinically normal and the other was improved. Eight of these patients had pathologic spinal fluids at the time of treatment; in three of them the fluid had become normal after the single course of treatment, in two it had become considerably improved and in one pathologic changes had apparently increased, although clinically the patient had become quite normal; the other two patients, owing to their clinical improvement, did not complete the treatment. In addition, a welth advanced case, which had failed to react to full courses of tryparsamide and other drugs, improved remarkably after a course of the compound.

LIFE SPAN HAS NOT CHANGED

Men of achievement apparently enjoyed just about the same average length of life two or three thousand years ago as they do today.

Alexander the Great, Persius and Terence died under or just over thirty years of age, reminding us that in modern times also not a few famous men have had their careers cut short by an early death, as was the case with Shelley, Keats, Schubert and others.

All in all, the average age at death of the eminent men of antiquity was 66.7 years, not much different from that of a sample of 82 noted mathematicians of modern times, namely 64.3, and of a sample of 75 poets, namely 64.1 years.

The average age at death of our presidents also is not very widely different, namely 68.4 years for the entire number and 61.7 years for those who held office since the Civil War.

To find this degree of similarity in the average age at death of a fairly typical list of men who became eminent two thousand or more years ago, on the one hand, and those of the very recent past, is probably to most of us a somewhat unexpected result.—*Metro-politan Statistical Bulletin*—New York.

HEALTH NEWS ITEM

The best ten years of a woman's life lie between 28 and 30.

Original Articles

SARCOMA OF THE UTERUS

WILLIAM T. CARLISLE, M. D.

CHICAGO

In considering sarcoma of the uterus, several truths suggest themselves. The correct preoperative diagnosis is rarely made. (In our group, the diagnosis was correct one time in thirteen cases).

There seems to be a general misconception as to the gravity of the prognosis; although as early as 1894, Williams noted that 40% of the patients recovered. Finally, no notable progress has been made in etiological or diagnostic criteria.

Historically, Lebert, in 1845, was the first to diagnose this tumor by microscopical examination. Mayer made the first report of this tumor to the Berlin Obstetrical Society in 1860. He emphasized that recurrent fibroids mentioned in the literature previous to this time were in all likelihood sarcomata. As early as 1888 Dr. Henry T. Buford reported the results of a vaginal hysterectomy for sarcoma of the uterus to the Chicago Gynecological Society. It is of interest to note that even at that time considerable controversy arose between Drs. Dudley, Jackson, W. W. Jaggard, L. L. McArthur and Franklin L. Martin relative to the accuracy of the pathological diagnosis of sarcoma and the comparative merits of vaginal hysterectomy in the treatment of this growth. J. Whitridge Williams, in 1894, while a graduate student in Berlin, contributed a monograph on sarcoma of the uterus, which for completeness and clarity has no peer. Numerous contributions have been made since that time notably those of Evans, Buntin, Masson, Lynch and others.

Frequency. Sarcoma constitutes about 2% of all uterine tumors or about 5% of the malignant growths. It is most common in the middle aged but may occur at any age. Sarcoma is predominately the malignant tumor in childhood.

Etiology. The etiology of sarcoma is, of course, unknown; however, Cohnheim's theory

(activated embryonal rests) seems to have the greatest number of adherents. Careful study in our series of cases failed to suggest any etiological factor even remotely concerned in the production of this tumor other than those commonly recognized.

Location. The body of the uterus is the common site of the sarcoma although it occasionally is found in the cervix.

Classification.

1. *Corpus Uteri*

- A. Topographical
 - 1. Intramural
 - 2. Submucous
 - 3. Subserous
- B. Histological
 - 1. Spindle cell
 - 2. Round cell
 - 3. Mixed cell
 - 4. Giant cell
- C. Antecedents
 - 1. Primary
 - 2. Pre-existing fibroid
- D. Limitation
 - 1. Diffuse
 - 2. Circumscribed

2. *Cervix Uteri*

Pathology and Histogenesis

A. *Topographical:*

1. **Intramural.** These growths may be primary, but more frequently develop as a result of metaplasia in a pre-existing uterine fibromyoma.

The "primary diffuse type" which is very rare, converts the uterus into a soft, smooth, organ not unlike a pregnant uterus. The cavity is elongated and the endometrium thickened.

The "primary circumscribed type" is characterized by a small, dense, sometimes encapsulated growth arising from the muscle cells, the connective tissue or the perivascular tissue of the uterine wall. The encapsulation is not perfect and diffusion occurs towards the uterine cavity or towards the peritoneal surface of the uterus.

2. **Submucous and subserous types** are usually larger than the interstitial and may reach huge dimensions. In advanced cases it is impossible to determine the point of origin.

Endometrial sarcoma assumes either a diffuse or circumscribed contour and occurs less frequently as a primary form than that originating in the muscle.

B. *Histological:*

1. **Spindle cell.** The spindle cell sarcoma is the commonest variety found in the uterus. It

Read before the meeting of Obstetricians and Gynecologists 86th Annual Meeting of Illinois State Medical Society, Springfield, May 19, 1936.

develops as a metaplasia in fibromyoma: the resulting fibrosarcoma or myosarcoma depends upon the particular form of differentiated connective tissue which it most resembles.

2. Round cell, mixed cell, and giant cell types are cell forms, together with the spindle cell type, all of which are transitional phases in the same general metamorphosis. Sarcoma is a tumor of undifferentiated mesodermic tissue; and as morphological alteration in the cells proceeds, the process may cease at any period in the differentiation. Thus, the first change is that of the spindle cell. This may persist as such, may become mixed-cell in type, or may develop into a pure round-cell form.

C. Antecedents:

Sarcomatous degeneration of fibroid tumors is relatively infrequent. Many cases, however, have been recorded in which the unchanged muscle cells and the sarcomatous spindle cells are in clear opposition. From this it appears that direct metaplasia must be accepted as a fact.

When sarcomatous changes occur, the tumor bears a striking resemblance to raw pork. A yellowish-white, homogeneous tissue totally devoid of fibrous elements replaces the pink-colored, coarse, fibrous arrangement seen in fibroids. The lack of standards among different gynecological pathologists for determining malignancy has led to wide variations in the statistics showing the frequency with which sarcomatous changes occur.

D. Limitation:

1. Diffuse type. This is the more common variety originating in the fundus and rapidly involving the entire cavity of the uterus. It occurs in adult life, grows rapidly, and results in a smooth, regular, uterine enlargement. On section, the entire mucosa is thick, shaggy, polypoid with areas of scattered caseation, necrosis and hemorrhage.

2. Circumscribed type. This growth usually begins in the fundus as a small nodule and may become either submucous or intramural, thus invading either the endometrium or the peritoneum.

Cervix Uteri. Sarcomata of the cervix may arise from its mucosa or rarely from the fibromuscular elements of this structure. These sarcomata are often pedunculated or polypoid and may present into the vagina.

The most interesting cervical sarcoma is the sarcoma botryoides or grapelike sarcoma. It is extremely malignant and resembles a hydatidiform mole. Growth is rapid and early metastases occurs. This neoplasm may occur in infants. Rare sarcomata of the uterus which may be mentioned are melanosarcoma, lymphosarcoma and angiosarcoma.

Metastasis and Extension. Sarcoma may spread by either metastasis or extension. Mucosal and cervical sarcomata spread toward the vagina. Those growths originating in the uterine wall usually extend through the peritoneal coat and by contiguity to the neighboring tissues.

The commonest sites for metastases are the liver, lungs, brain or retroperitoneal glands. Less frequently the intestines, kidneys, omentum and bones are invaded. Metastases occurs by means of the blood stream.

Symptoms. Sarcoma may occur at any age. The average age incidence in our group was 45 years. There is no syndrome sufficiently characteristic of sarcoma to make more than a highly presumptive diagnosis.

Although the symptoms in our group, viz.: abnormal uterine bleeding, abdominal tumor, marked pain arising in a pre-existing fibroid, discharge and pressure symptoms, are those commonly ascribed to sarcoma, these manifestations were not sufficiently definite to make a positive preoperative diagnosis except in one instance.

The co-existence of sarcoma and uterine fibroids leads to a confusion of symptoms and the presence of malignancy may pass unnoticed until hemorrhage, metastasis or necrosis render the diagnosis obvious. Sudden rapid growth of a fibroid or the development of pain in such a tumor should lead to suspicion of sarcomatous change. In our series of 13 cases six were nulliparous. Multiparity bears a similar relationship to sarcoma and fibroids.

Diagnosis. Early diagnosis is difficult, because the symptomatology is so vague, but the following are the essential points: Sudden, rapid growth; attacks of pain in a uterine fibroid; recurrence of a fibroid-like polypus; intermittent bleeding in a woman who presents a palpable uterine tumor and who is past the menopause; evidence of cachexia which is out of all proportion to the blood loss in a woman with a palpable uterine growth; large necrotic

STUDY OF SARCOMA OF THE UTERUS AT ST. LUKE'S HOSPITAL, 1927-1934 INCLUSIVE

Name	Age	Symptoms	Findings	Menstrual	Obstetrical	Pre-Operative Diagnosis	Operative	Diagnosis	Pathol. Diag.	Course
M. G. Dr. A. H. C.	44	Menorrhagia, Metrorrhagia, Dysmenorrhea, Backaches 7-1-29	Large abdominal tumor	Normal until 40 yrs. of age		Uterine fibroids	Necrotic degenerative fibroid Hysterectomy		Spindle-cell sarcoma of uterus	Vesico-vaginal fistula Metastases in 3 mo. Death in 5 mo.
M. S. Dr. E. A. E.	49	Bleeding, Loss of weight Incontinence—7 yrs. 7-21-34	Pallor Large abdominal tumor	Menorrhagia Metrorrhagia	Para II Grav II	Fibroid uterus	Fibroids Hysterectomy		Spindle-cell sarcoma of uterus	X-Ray Discharged: improved in 3 wks. No recurrence.
C. C. Dr. E. A. E.	57	Loss of weight Abdominal mass—	Large abdominal tumor	Regular with men- orrhagia until 56 yrs. 3 mo. amenorrhea	Para II Grav II	Ovarian malignancy	Vascular tumor of corpus Hysterectomy Salpingo-oophorectomy		Spindle-cell sarcoma of uterus	Discharged well in 4 wks. No recurrence.
F. P. Dr. H. O. J.	34	Mass in abdomen Pains in R. L. Q. 7-25-31	Abdominal tumor Cervical tumor	Normal	Grav IV Para II	Ovarian cyst	Malignant cyst-adenoma of right ovary Hysterectomy Oophorectomy		Spindle-cell sarcoma of uterus	X-Ray Metastases to liver in 3 mo. Good response to X-Ray Death in 1932
J. S. Dr. A. H. C.	46	Severe hemorrhages 7-21-28	Enlarged corpus of uterus. Curettement	Normal until April, 1928	Grav IV Para III	Sarcoma of uterus	Malignant degenera- tion of fibroid Pan-hysterectomy		Sarcoma of uterus	Vesico-vaginal fistula X-Ray Well 5 mo. later No recurrence.
N. O'B. Dr. H. O. J.	50	Abdominal pain Profuse bloody discharge— 7-28-31	Relaxed perineum Cervical fibroid polypus	Regular with men- orrhagia menopause at 48	Grav III Para II	Cervical fibroid polypus	Degenerative fibroid 1) Removal of polyp 2) Hysterectomy 3) Salpingo-oophorec- tomy		Spindle-cell sarcoma of uterus	Radium—X-Ray Recurrent pain and discharge Recurrence in vagina Living
M. G. Dr. H. O. J.	39	Pain in L. L. Q. Bloody discharge 12-8-27	Abdominal tumor— large	Normal		Uterine fibroid	Degenerative fibroid Hysterectomy Salpingo-oophorectomy		Spindle-cell sarcoma of uterus	X-Ray Discharged Improved in 4 wks.
I. H. Dr. B.	60	Abdominal tumor 8-8-26	Large abdominal tumor	Normal Menopause at 50 yrs		Uterine fibroid	Large fibroid Hysterectomy		Spindle-cell sarcoma of uterus	Recurrence and death 8 months
B. M. Dr. C. A. H.	38	Sciatica—5 mo. 7-13-30	Mass in L. L. Q.	Normal Menopause at 35 yrs.	Grav V Para I	Ovarian cyst	Ovarian cyst Removal of mass		Spindle-cell sarcoma of uterus Fibromyoma	Discharged unim- proved in 4 mo.

STUDY OF SARCOMA OF THE UTERUS AT ST. LUKE'S HOSPITAL, 1927-1934 INCLUSIVE

Name	Age	Symptoms	Findings	Menstrual	Obstetrical	Pre-Operative Diagnosis	Operative	Diagnosis	Pathol. Diag.	Course
M. W. Dr. E. A. E.	60	Hernia Mass in abdomen 7-22-34	Mass in R. L. Q.	Normal		Uterine fibroid	Fibroid Hysterectomy		Fibro-sarcoma of uterus	Discharged improved in 2 wks. No recurrence
M. D. Dr. A. H. C.	27	Acute abdominal pain 9-6-27	Acute abdomen	Irregular leucorrhea		Ectopic pregnancy	Rupture of right tube Right salpingectomy		Round-cell sarcoma of uterus	Improved Discharged in 10 days Living
E. B. Dr. H. O. J.	68	Pain in L. L. Q. Backache Bleeding 12-29-28	Cervical tumor Biopsy Curettement	Normal Menopause at 54 yrs.	Para I Grav I	Carcinoma of cervix (1) Sarcoma of uterus (2)	1st) Carcinoma of cervix 2nd) Sarcoma of uterus		Sarcoma of uterus Spindle-cell	Anaesthetic death
M. W. Dr. W. T. C.	83	Rapidly enlarging abdominal tumor Dec. 1934	Large tumor	Menorrhagia 2 yrs.		Uterine fibroid	Degenerating fibroid		Spindle-cell sarcoma of uterus	Living

cervical growths; uterine tumors in infants and young girls.

Complications. These are largely due to invasion of neighboring structures and erosion of blood vessels. The bowel, rectum, bladder, ureters are the structures most frequently invaded.

Prognosis. The prognosis varies with the type of tumor. Certain fibrosarcomata grow so slowly and metastasize so late that a fatal issue may be indefinitely postponed. In rapidly growing sarcomata the duration of life is rarely over three years. The grapelike sarcomata of the cervix are exceedingly rapid in growth, metastasize early and are almost always fatal.

In Masson's series of 50 cases, the primary operative mortality was 4%, a lower rate than is generally conceded. Of the remaining 48 patients, 10 died; four during the first year after operation and the remaining six within two years. Thirty-six were in good health after the five-year period. The total mortality was about 25%. If all types of the tumor are included, and this is especially true of the grapelike variety, the mortality is probably considerably higher than these figures would indicate. Statistics are unfortunately few and scattered.

Evans in his study of 72 tumors pathologically diagnosed as sarcomatous at the Mayo Clinic concluded that the only single constant microscopical evidence of definite malignancy is the presence of a large number of mitotic figures. In the absence of mitotic figures, tumors containing many large giant cells with multiple hyperchromatic nuclei should not be regarded as malignant.

Treatment. The difficulty in diagnosis necessarily makes the treatment unsatisfactory. In the past few years radiotherapy has come rapidly to the fore, supplanting radical surgery. However, cases have been reported in which sarcomata became necrotic following radiation.

Since embryonal sarcoma cells are susceptible to radiation, good results should be obtained. Unfortunately there are no conclusive statistics relative to the merits of this therapy of which the writer has any knowledge.

Radical surgery is probably best in all early cases. This may be supplemented with radiotherapy.

The Wertheim operation is the procedure of choice followed by intensive x-ray irradiation

given in series for at least two years. No consideration of the treatment of sarcoma is complete without mentioning the work of W. B. Coley who used erysipelatosus and prodigiousus toxins. It appears that the combined toxins sometimes play an important role in preventing malignant recurrence or metastases. Occasionally they may be curative but they are of particular value in the treatment of bone sarcomata. No representative series demonstrating the use of Coley's toxins in genital tract sarcoma is to be found.

122 South Michigan Ave.

DISCUSSION

Dr. Richard K. Collins, Aurora, Ill.: I believe that Dr. Carlisle is to be complimented upon the paper which he has presented this morning and upon the way he has covered the subject. In preparation for this discussion I looked up the literature and also the records in our own hospital. In Aurora we have three hospitals, each of 100 beds. They are hospitals in which the pathologic sections are passed upon by the pathologist, and the same difficulty in finding sarcoma has been the experience there as elsewhere. In reviewing the records over a five-year period in one of the institutions and a three-year period in two other institutions, I was only able to find one case of sarcoma of the uterus. Even in that particular case the pathologist was not entirely satisfied with the diagnosis. That was the case of a woman, age forty years, who died following cesarean section for the delivery of her thirteenth child. The reason for the section was the presence of a malignancy involving the lower uterine segment, making delivery from below impossible. This was removed at autopsy and the tumor described as a mixed cell sarcoma. So I think that the one thing Dr. Carlisle has brought to our attention which we should bear in mind is that it is not an easy diagnosis to make clinically, and that at present it is made very rarely. When the pathologists have trouble I do not think we as clinicians should feel badly when we miss the diagnosis.

Dr. Otto H. Crist, Danville, Ill.: This paper is of especial interest to me because tomorrow I am scheduled to operate on a polyp which has recurred. The patient is a young woman, and I wonder if this is a sarcoma. I have only her statement that two years ago she had a uterine polyp. I would like to ask Dr. Carlisle if this polyp which protrudes through the vulva would show sarcoma or if you must go to the base to find sarcoma. I would like to ask Dr. Carlisle if the sarcoma is diagnosed early, should we do an abdominal or vaginal hysterectomy.

Dr. W. T. Carlisle, Chicago (closing): The difficulty I am sure in evaluating whether the polyp described by Dr. Crist will be a degenerating fibroid or a sarcoma will be the same difficulty that has been present since the discussion that I mentioned in 1888.

The lack of adequate criteria makes it difficult to state whether that is sarcoma or not. I would like very much to have some good pathologist straighten us out. I believe, just as several others believe, that the fibroid-like polyps that recur and protrude through the cervix, particularly those that recur promptly, should be considered sarcomatous and should be treated as such. That is said simply because so many have been reported in which the first or second examination failed to reveal sarcoma, and a few months later the patient would return with sarcomatous metastases.

The choice of abdominal versus vaginal hysterectomy began at its inception as far as I am concerned in 1888, and still is one of the points of controversy.

I believe that the "ideal" treatment, presuming that a correct preoperative diagnosis has been made and any treatment is ideal, that a Wertheim operation followed by irradiation is the best we have to offer.

GYNEPLASTIC AND MINOR OPERATIONS IMMEDIATELY FOLLOWING DELIVERY

OTTO H. CRIST, M.D.

DANVILLE, ILL.

There is a large class of women suffering from conditions resulting from childbirth. This class of women is inefficient in their homes. They are inefficient in their communities. They are unjust to their families and unfair to themselves. There is a large per cent. of this number who are not having their condition corrected because they can afford neither the time nor money for hospitalization or operation.

As far back as I am experienced in medicine the teaching has been that no operative work should be done on the genital tract for at least three months after childbirth. It was believed that healing would not take place under the condition which existed after childbirth for at least, that period of time. The lochia, the edema, the congestion and the maceration which result in most cases were some of the conditions which it was thought were unfavorable to healing.

I practiced according to this teaching for years. Many times I was asked to do a repair operation when the next baby came and as many times patients were told that I was very sorry but it could not be done that way. I would be only too glad to accommodate them but I was

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sure the operation would be a failure. They were told that labor would be all they could stand and that operative procedures would not be safe. We took these statements for granted. So far as I can learn, no one had ever tried such operations until comparative recent years. These opinions were simply handed down.

At first thought, we can see that such teaching was not consistent. Everybody was advocating and practicing the repair of recent lacerations of the perineum when the general condition of the patient permitted. They were healing fairly satisfactorily. Why, then, would not an old laceration, if properly repaired, heal just as well?

Dr. Barton Cook Hirst was the first to venture from this old ruling. He devised and practiced what he saw fit to call the intermediate operation. His plan was to wait eight days for the repair of recent lacerations until involution was well under way, until congestion and until lochia were less for then he claimed better results.

I saw him do one of these operations. Under general surgical anesthesia, the tissues were brought together layer by layer. His great pride was in making a definite apex to the perineal body. The completed operation was very nice. This procedure however, was not generally accepted.

In my opinion, it is unreasonable to ask a patient who is convalescing normally to the eighth day post partem to take a surgical anesthetic and have a regular operation performed that will confine her to the hospital for 10 to 15 days longer. It might be satisfactory for clinic patients but it is not applicable to private practice.

In 1925, Bubis of Cleveland published his first paper entitled, "Gyneplastic Repair Following Childbirth." He reported 169 cases in which the results were good. The mortality or the morbidity was not increased and the hospital stay was but little more than the normal time.

I read this paper. I liked the idea. It appealed to me as a good procedure that would take care of many of these neglected cases. On the strength of this one authority, I started to watch for a suitable case to try it out. This took some little courage since all other authorities, so far as I knew at that time were condemning the idea.

While watching for proper cases, strange to say, Mrs. Faulk and Mrs. Faulkner came in about the same time. They were each Para. 5. They were each 33 years of age. They were each about 8 months pregnant and they each asked if their old lacerations could not be repaired after this childbirth. They were strangers in town. I considered that the publicity of their failures would not be great so I told them that it could be done.

I will give a brief history of these first two cases: Mrs. M. F., aged 33 years. Para. 5. Examination showed the perineum very lax, cervix was badly torn in both angles. Cystic degeneration and ectropion were marked with ulceration wide around os. She was delivered of a normal male child, weighing 8 lbs. 8 oz., on December 8. The anterior lip of the cervix was so large and heavy that a V-shaped piece was cut out transversely, destroying the cysts. Both angles were denuded and repaired in the regular way. The incision of the anterior lip was closed with catgut sutures. The mucous membrane was dissected up from the posterior wall of the vagina and a V-shaped piece excised. The levator muscles were united in the regular way and the fascia was closed with chromic gut, and this covered with mucous membrane. She was in the hospital 13 days. She had no complications. On December 28, she dropped into my office for examination, having been downtown shopping. This was one day less than 3 weeks after her operation. The union of the perineum was perfect. There was a smooth, normal perineal body. The cervix was still rough though not completely healed. On October 8, 10 months later, she had a severe leucorrhoea. Examination showed the uterus in good position, perineum was perfect, and the cervix had a good, smooth, normal contour. There was a large erosion about the os. This was cauterized. Three years later, phone communications state that she is just fine, feels much better than before her operation, no pelvic complaints, thinks it was just the thing.

Second case: Mrs. J. F., aged 33 years, Para. 5. Examination showed perineum extremely lacerated, cervix negative. On January 10, she was delivered of a normal child weighing 11½ lbs. No repair of cervix. Repair of perineum as stated in previous case. There was much scar tissue in this case and it was very hard to dissect. There was quite a large amount of bleeding. She had some pain following this operation. There were no complications. She left the hospital on the 14th day. Examination after involution showed a good strong perineum. The patient was delighted with the way she felt.

While preparing this paper, I took occasion to phone these two women. Both stated that they were feeling fine; much better than before, and were perfectly satisfied with their results.

In 1928, Potter published an article entitled,

"Immediate Repair of Birth Canal Injuries After Labor." His paper dealt entirely with repair of recent lacerations of the cervix. In a talk with Potter two years ago he informed me that he took a stitch in each angle of the cervix whether or not it showed a definite separation. He claimed better involution and less cystic degeneration. It does not interfere with subsequent labors. He reported 1,000 cases so treated in 3 years with good results. In a recent communication he states that he is continuing the same practices.

In the same year, W. C. Danforth of Evanston, published an article entitled, "Immediate Repair of the Cervix Following Labor." He reported 975 cases from the Evanston hospital with good results. Out of 904 perfectly normal case, 102 showed tears that warranted attention. This goes to prove that many cervixes are torn that are not suspected.

In 1928, Bubis published his second paper, "Ten Years Experience With Gyneplastic Repair." In this he tabulated 1019 cases so treated, with good results. It is routine treatment at Mount Sinai, Cleveland, where it is needed.

Bubis found that 50% of multiparas had old conditions that warranted repair. Our ratio has not been nearly so high. We do not repair a fair perineum or cervix but only those that are markedly affected or such cases as have symptoms which call for relief. The lesser cervical conditions are treated in the office by cautery.

In modern obstetrics, the major disasters approach pretty nearly the vanishing point. I refer especially to the toxemias, the infections and hemorrhage. It is time then to note the minor casualties. Let it be understood that what I am advocating here applies only to those who have modern facilities for work. It should not be attempted in the home except in case of emergency.

An obstetrician is a high-class surgical specialist; as such he may undertake his special operations where the general or occasional operator would think inadvisable. He should examine the birth canal where there is any reason to believe there might be a tear. He will find no small number of cervical tears, even where they were not expected.

I do not examine all cervixes following labor as is recommended by Danforth and Potter. I

examine only such cases as I have reason to suspect lacerations; cases that have had previous cervical repair; cases in which blood precedes the advancing head; operative deliveries or cases where so-called manual dilatation has been used for any reason, are examined.

I have contended consistently at home and I repeat before this august body that there is no such thing as manual dilatation. Where such is attempted it results in manual separation or manual laceration. Only nature can dilate a cervix perfectly and that is done best over a normal bag of waters. Since it is agreed that a large per cent. (according to Polak, 51%) of all gynecological surgery results from labor, it would seem that any safe and sane prevention of this would be advisable. It would be of great economic value to the patients and prevent much pain and suffering.

The operations which I have performed following delivery include the ordinary birth canal plastics, together with various other minor conditions. These have been done in various combinations on 73 patients. Of course, it is agreed that this is too small a number to be of any statistical value but being private cases as they were and being followed up with a personal interest, I believe that I am justified in forming an opinion.

There is more untreated pathology in the cervix than in any other organ of the body. This procedure corrects and prevents some of it. You can see by this number that it is only the occasional case that is considered suitable. I have been several years accumulating this number.

These operations have been done with no assistance except the regular scrub nurse on the obstetric case. She is a nurse in training. My regular assistant is at the anesthetic. The operation is decided upon from the office examination. The patient is always given to understand that the operation will be performed if conditions are favorable. After delivery, in the regular way, she is put in lithotomy position as for any gynecological operation. She is given 1 cc of pituitrin to help control the blood in operative field. She is given ether anesthetic just to the point of controlling her. The proper instruments are essential for easy work. For the cervix I use a self-retaining, lateral spring retractor. I usually place a small lap sponge in the uterus to keep the cervix free from blood. The anterior lip

is picked up with a DeLee cervix forceps. Two forceps are used, one ahead of the other, until the angle is reached and then on to the posterior lip. It is sometimes hard to grasp without following around. Inspection is carried around the cervix. If there is old cystic or scar tissue, it is cut away with long, curved scissors as in regular trachelorrhaphy. No. 2 chromic gut interrupted, closes the break. This is repeated on the opposite side, if necessary. If either lip is markedly cystic, I have frequently cut a V-shaped piece transversely from this lip. I have also used the cautery on such cysts. Cautery is not very satisfactory here on account of free blood.

If there is to be perineal repair, the pack is left in the uterus. The ordinary vaginal retractor is used. The operation is done as a regular perineorrhaphy. Operating is difficult. Tissues are friable. Dissection is hard. Bleeding is free. Wide T clamps work well to hold mucous membrane. A delicate technique cannot be carried out; however, muscles can be brought together. Fascia can be united and the whole covered with mucous membrane. The pack is now removed from the uterus. It is rougher when finished than an interval operation but an involution progresses, it looks better and better.

I have done only one cystocele operation. Results in it were perfect. The operation is very hard on account of friable tissues and bleeding. It is done in the regular way. A pressure pack was left in the vagina to control oozing and support the bladder.

The hemorrhoids which I have removed at this time have not been the large veins that come and go with pregnancy. They have been annoying skin tags or large hemorrhoids that were there before pregnancy. If large, they were ligated and cut. If small, they were cut off with no ligation.

The after treatment was the same as with any repair operation. The discomfort has not been greater than that of recent repairs. A few had to be catheterized for a few days. We sometimes see that in normal labors.

The stay in bed or in the hospital was prolonged but very little as will be shown by slide. Think what a saving to the patient and to the patient's family. She has had her baby. She has had her operation. She is at home on time.

Subsequent labors are not interfered with.

Several of my patients have had babies since their operations. The cervix is the same as after any repair operation. They sometimes give way. They should be examined and repaired immediately, if necessary. The perineal scar is the same as after any perineorrhaphy. These usually need episiotomy at subsequent labors. I have never yet found a heavy perineal scar an indication for Caesarean section. A deep episiotomy takes care of any perineum. For the most part, these operations were done on patients who did not expect to have additional children. The operation however, is no contra-indication to other pregnancies and labors.

My results have been very gratifying as I will show by slide. No patient has been dissatisfied with her results. One, however, did object to paying her confinement bill because I did not repair her perineum as we had intended. This case was not repaired on account of excessive hemorrhage.

The main advantages of gynecoplastic operations at this time are:

First: Many patients are relieved of pain and suffering and debility, who either would not, or could not, be operated on at any other time.

Second: The economic saving in hospital expense and time from home is no small item.

I wish to recite a few case histories as proof of these points:

Case 18 in my series: Mrs. P., aged 26 years, Para 3. Examination: Cervix; lacerated with marked cystic degeneration; lacerated in both angles. Perineum; very lax. Leucorrhea since first child. Operation: Cervix; cystic parts cut away; angles denuded and sutured in regular way. Anterior lip from which a V-shaped portion was excised was sutured together. Posterior lip was normal. No cautery used. Perineum: Not a very extensive repair; regular technique. Patient left hospital 13 days following delivery. Examination on leaving hospital; perineum perfect. Examination 2½ months later; conditions perfect throughout. Uterus in good position, cervix had a round os, perfectly healed and smooth; no scar noticeable; perineum perfect; slight discharge.

Case 33. Mrs. M. Para 5. Frail, little woman, weighing less than 100 lbs. Extreme bulging cystocele; large, boggy mass just below meatus. Cervix very thick, cystic and heavy. Lacerated in both angles and turned out. Perineum very lax. Uterus hanging low. Immediately following labor, Jan. 21, the cystic portion of the cervical lip was cut away with a V-shaped excision. Both angles were excised. Three sutures were placed in either angle in the repair of the cervix. Cystocele was split and dissected back in the regular

way. Excessive tissue was removed. The fascia was brought together by imbrication. There was excessive bleeding. Friability of the tissues made operating very difficult. Perineum was repaired in the regular way. Excessive mucous membrane was removed; closed layer by layer. The general condition of the patient was satisfactory at the close of the operation. A gauze pack was left in the vagina over night as a compress to control bleeding and support the bladder. The patient had no complications. She left the hospital 11 days after labor. Examination in my office on February 10th, which was one day less than three weeks after delivery, showed perineum and cystocele in perfect condition, the cervix well healed and the os round. She had been doing her own work and drove to town from 12 miles in the country. This is my banner case.

Case 36. Mrs. H., aged 25 years, Para. 2. First labor was a hard forceps delivery with complete laceration. This had been repaired with a poor result. She had very little perineum which was solid scar formation. She had poor sphincter control. She had been told by the Doctor who had previously taken care of her, never to have another child or she would surely die. Labor was induced at term by quinine and castor oil. Normal delivery with deep episiotomy around the perineal scar. No repair was done on the cervix. Perineum: Old scar was cut away; muscles and fascia dissected out; sphincter united in mass and levator muscles closed high and this was covered with pelvic fascia forming a dense, heavy perineal body. The patient had no complications. She was in the hospital 15 days after delivery. Examination in my office six weeks following delivery; she states sphincter control is perfectly good. Perineum is a good, firm body. Cervix has no erosion. There is no discharge. Uterus was in posterior position as it was before pregnancy.

Case 40. Mrs. D., Para. 2. First labor had been a hard posterior, instrumental delivery, at which time she had a complete laceration. This repair was attempted immediately, but was unsuccessful. About two weeks later, she was taken to the operating room and the lacerations were repaired. She came to me with her second pregnancy. Examination showed practically no perineum and what she had had been by granulation. A thin fibrous scar made up the perineal body. She had poor sphincter control. Before labor she carried her baby in the right posterior position as she said she had her first child. This position was corrected by abdominal binder and pads before labor. This case would have had indications for Cesarean section by many men. I advised that by deep episiotomy she would deliver normally. This was done and labor was practically uneventful. After labor, the perineal scar was dissected out and the vaginal mucous membrane was lifted and the perineal body built up with muscle, fascia and mucous membrane. Recovery was uneventful. She was in the hospital 12 days. Examination later in my office showed a fairly good perineal body, good sphincter control, some cystocele and the uterus low in the pelvis and posterior. I have delivered this woman 3 times since this. Each has been with deep episiotomy and results have been, better

perineum and better condition with each succeeding repair.

Case 47. Mrs. L. Para. 3, age 40 years. Cervix was lacerated at both angles and ectropion and marked cystic degeneration. She had no perineal body. After labor, all cystic parts of the cervix were cut away. Repair was made on both angles. The perineum was repaired in the regular way. She was in the hospital 12 days. Examination in my office, six weeks following labor, showed the uterus in good position, cervix and os like nullipara, perineum in perfect condition holding up like nullipara woman.

There are, however, certain contra-indications for operations at this time:

1. Excessive hemorrhage.
2. Long labors with shock.
3. Hard operative deliveries.
4. Lung involvements.
5. Infections or potential infections.

From the experience of others, and from our own experience, we might draw the following conclusions:

First: Repair of old pathology of the birth canal and minor operations after labor are sane, practical and advisable.

Second: Pain and suffering or discomfort is no greater than immediate repairs or intermediate operations, or interval operations.

Third: Contrary to previous teaching, healing is just as good as in immediate, intermediate, or interval operations.

Fourth: The stay in the hospital is but very little prolonged.

Fifth: From an economic standpoint, it is highly commendable.

Sixth: Subsequent labors are not interfered with or complicated more than following any repair operation.

Seventh: Operative deliveries are not contra-indications so long as the patient is in good general condition.

Eighth: Obstetric cases should be given the same consideration as major surgery and require the same high-class surgical skill.

DISCUSSION

Dr. Frank F. Maple, Chicago: I think Dr. Crist has fairly stated the pros and cons of obstetrical repair of conditions following this labor and the labors that have preceded the one in hand. I agree with Dr. Crist entirely that 51% of our gynecological operations are due to poor obstetrics and the other 49% to the gonococcus, and we could remove those and also remove the gynecologists. I agree with Dr. Crist that neither he nor I can do a manual dilatation. I believe we

always get tears if we do dilatation. Perhaps they are not visible; they may be minute, separation of the muscle perhaps, but that cervix will show a tear at subsequent examinations.

Dr. Crist has stressed the permanency of this procedure. If I take the negative it is for two reasons. First, the experience of those whose judgment I greatly respect. Dr. Webster was very much against such operations early, as he was against operations performed during the puerperium. It was his conviction that it took a woman's tissues twelve months to return to normal. Dr. DeLee does not approve of operations during the ten or twelve days' stay in the hospital. He is also against performance of operations during delivery. P. Brooke Bland of Jefferson Medical College takes the same stand. Dr. Beck of the Long Island Hospital and College takes the same stand, though he will change his opinion on advice. I have had occasion to look up my own cases after I was notified of Dr. Crist's intention to read this paper. My series was only thirty, and this included one cystocele, one rectocele, the rest being perineorrhaphies and vaginal repairs of some sort or other. In my cystocele I cut into the bladder, the only bladder I have ever gotten into in operation. I believe had I the operation to do again I would again cut the bladder because I cannot identify those tissues. The patient with the rectocele went home in good shape, and, as Dr. Crist said, there was apparently no suffering from the operation. She returned some weeks later with the same complaints. I found that she had a rectovaginal fistula which I could not account for. My operations for perineal repair looked fairly well at the time but I was not satisfied when these women returned a month or several years later, even though there were no symptoms on the part of the patient. The job did not look good. I believe that Dr. Crist admitted that he was compelled to omit the finesse of the operation, because the operation could not be done as well as though it were performed twelve months later.

If we summarize the reasons for the conditions that I gave and that Dr. Crist feels that he was able to overcome, we might state then under a few headings. We know the lochia is infected in twenty-four hours. We know that 70% of the genital tracts contain some variety of streptococci. If we open up new locations for the invasion of organisms, we are fearful that these organisms present as they are and the lochia furnishing a nice medium, will extend the infection to tissues not otherwise involved. We know we have a distorted anatomy. We know we have inter-tissue hemorrhage and hemorrhage that is not grossly apparent but does exist nevertheless. We know that we have agglutination of tissues, that we are not able to identify fascial planes, but we are able to identify muscle and mucosa. We are very much afraid that cystoceles and rectoceles lend too much danger of damage to the underlying viscus. We know we are operating in the presence of hemorrhage. Dr. Crist gave both sides of the question and gave all the material, and gave it fairly.

Those are my objections to doing operation and they may have come about through my own results. We always do routine episiotomies on multiparas at full term. These episiotomies lend themselves to surgical repair. We make a routine examination of the cervix after manipulative or operative deliveries only, not after spontaneous deliveries. We rather take a chance on an unobserved lesion being there than to examine every case that has just been delivered. The episiotomies are repaired layer upon layer. I wonder if the experience of the others present is the same as mine, that even though we have done a nice episiotomy and apparently a good repair that when this woman comes back in six months or twelve months, I am not satisfied. We do not get 100% perfection in our episiotomies, but we are doing the best we can with the knowledge we have.

Dr. William F. Hewitt, Chicago: I would like to ask Dr. Crist if he has had any experience in over-repairing, in other words, getting the vagina too tight. It was the experience a long time before episiotomies and perineotomies were so commonly done that a beautiful delivery would be carried out from the standpoint of having no tear, and six months later the patient would come back with a nice cystocele and rectocele, after the obstetrician had very carefully informed the husband and relatives that there were no tears. In other words, there is a difference in looking at an old perineum that is edematous and one in which the tissues show the softening of pregnancy. Therefore, I wonder how much trouble Dr. Crist had in training his judgment on how much to take up and when to stop.

Dr. Otto H. Crist, Danville, Ill. (closing): I have been fortunate, according to Dr. Maple, in having no bladder or rectum opened. I stated in my paper that I did not do many cystocele operations. I would like to show you, if you come to Danville, some of my results. I have had no case break down as a result of injection, which Dr. Maple mentions as possible. I have wondered myself sometimes why it did not happen but it does not. We have all had the results with episiotomy that Dr. Maple mentioned. Nobody has been able to explain them on local conditions so far as I know. The patient goes home with a result you think is perfectly good and when she comes to the office you are ashamed. There are certain individual tendencies of muscle, tissue and constitution which cause that result.

As to experience with over-repair, I sometimes get an over-repair with interval operations but I have not noticed that it was more common at this time than after perineal repair at any time. We simply try not to do it. We watch the space of muscle and fascial closure. Once in a while we do get an over-repair, but not more often than at other times.

I think I answered Dr. Hewitt's last question in describing a case of perineorrhaphy that came to the office and we were ashamed of. I have had as good functional results though not as smooth with this operation as with the interval one. I can show you

a good many cases with a round os after repair at this time, which is more than I frequently get after an interval operation of trachelorrhaphy. The perineums are built up not so good to look at, but functionally good, and the women are satisfied.

MEDICAL DISORDERS IN PREGNANCY AND THEIR EFFECT UPON LABOR

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Our ideas concerning those diseases with which pregnancy may be associated have undergone a complete revision within the last decade. Heretofore, it had been customary to speak of any medical disorder as a complication of pregnancy and, therefore, to lose all perspective with reference to both. At the present time it can be definitely stated, certainly with respect to those chronic diseases such as tuberculosis, diabetes, cardiac disease, nephritis and thyrotoxicosis that these constitute primary medical disorders and the superimposed pregnancy is a secondary added factor and therefore, a complication of the primary disorder. The course of any pre-existing disease with the added burden of pregnancy must certainly be modified and often to the detriment of the patient's health and longevity. It must be admitted also that the pregnancy is likewise modified. Our problem is to study the effect of pregnancy on any given disorder and to determine to what extent and for how long both can be made compatible. The application of sound principles of medicine, treating the individual patient as a whole, study of the primary pathology and its modification by pregnancy, with the co-operation of the services of a competent internist will do much to simplify the problem. In this way many more pregnancies can be carried to term or close to term that might otherwise have been unwarrantedly sacrificed, and on the other hand a pregnancy producing a deleterious effect upon the patient can be interrupted, thus prolonging the patient's life. Where the services of an internist are not available, the entire responsibility may fall upon the medical attendant to be dealt with single-handedly. Another factor of importance is the proper evaluation of maternal morbidity and mortality as it

is now admitted that these medical disorders may be directly or remotely responsible for a part, at least, of our so-called increased maternal morbidity and mortality. I shall consider the major disorders mentioned above, give their clinical course as modified by pregnancy, and cite case reports wherever possible showing a favorable outcome by co-operative management and by the institution of both conservative and radical treatment to meet the needs of the given case.

Tuberculosis and Pregnancy. Although much progress has been made in the treatment of tuberculosis in recent years, the question of this disease complicated by pregnancy is still in a very nebulous state. While there are several types or classifications and groups of circumstances, individualization seems to be the most important factor. Consequently, it is very difficult to generalize.

With reference, first of all, to the advisability of pregnancy in a tuberculous individual, it can be stated that the patient who has an arrested tuberculosis of three years' standing, who is maintaining her weight, whose sputum is negative for tubercle bacilli, whose physical examination of the chest reveals a healed process, may undertake pregnancy if she so desires. It is impossible to state in advance or even early in pregnancy what the outcome may be. Even in arrested, healed tuberculosis an old focus may be activated during pregnancy or in the puerperium. If pregnancy is established and the patient continues to do well, she may continue with her pregnancy under careful supervision. From the standpoint of pregnancy this type of case is the most favorable; many such patients go to term. Should clinical symptoms develop within the first trimester of pregnancy, the question of termination and the method must be considered. Under these circumstances it would seem advisable, more particularly in a nulliparous patient where the desire for a child is paramount, to resort to therapeutic abortion preferably by dilatation and curettage under morphine and local anesthesia. The operation should be done in one stage. The patient may then be instructed to carry out a rigid course of sanatorium treatment, or home treatment if the former is not possible, and to try pregnancy again at some future time. Where abortion is refused, sanatorium treatment or prolonged rest, must be carried out for the duration of the pregnancy.

From the Departments of Obstetrics of Michael Reese and Wesley Memorial Hospitals.

Read before Meeting of Obstetricians and Gynecologists, 86th Annual Meeting of Illinois State Medical Society, Springfield, May 19, 1936.

The semi-surgical procedure of pneumothorax may be done in cases where there is unilateral involvement; surgical procedures such as thoracoplasty and others, are not recommended.

In the case of open or active clinical tuberculosis pregnancy should not be undertaken. If pregnancy should occur under these circumstances, the serious nature of this complication should be carefully explained to the patient and her family. Interruption of pregnancy is advisable early in its course. There are two procedures which may be carried out. If the patient is a multigravida, the course is made easier provided there are no personal objections. Such a patient, as regards her tuberculosis, would do better not to have future pregnancies. Therefore, abdominal hysterotomy and sterilization are the operations of choice. In the case of a primigravida or multigravida where a child is highly desirable, therapeutic abortion is the operation of choice, carried out as mentioned above. This leaves the way open for a future pregnancy and a possible rest period of two to three years, preferably in a sanatorium, where the necessary treatment can be directed primarily to the tuberculosis. Also, in this same type of case, if interruption of pregnancy is refused, the patient must bear the risk of the possible downward course which may undoubtedly become manifest either in the puerperium or a little later.

Termination of pregnancy, to be of any value at all, should be done early. The apparent improvement in the later months of pregnancy due to the growing uterus and the rising diaphragm is no assurance that the tuberculous process has been arrested. The danger in the puerperium is very great. A number of rapidly progressing fatal tuberculosis are traceable to this fallacy.

In those patients who have been fortunate enough to carry to term, under the course of treatment as outlined above, the conduct of labor is highly important. The first stage should be carried out under analgesia; morphine or pentobarbital gives excellent results. The second stage should be as short as possible; prophylactic forceps is a commendable procedure. The question of anesthesia is important. Ether is contraindicated; gas may be employed although it increases the tendency toward cyanosis which is not desirable. Local anesthesia or sacral block

anesthesia may be recommended. The delivery should be carried out with as little shock, trauma and surgery as is consistent with good work. Cesarean section is not indicated unless there is some pelvic contraction, or where sterilization is carried out at the same time; local anesthesia is recommended.

The puerperium is a critical period. Rest is important; involution of the uterus should be hastened with any of the ergot preparations. Theoretically, it has been stated that the products of cellular autolysis as a result of uterine involution have a deleterious effect upon tuberculous lesions, healed or otherwise. This may be the reason for the downward course in the puerperium. Lactation is not necessarily contraindicated in the "closed" case; it is definitely contraindicated in the "open" case. In either event lactation is an unnecessary strain that can easily be dispensed with, in the interest of the mother. The question of contact of the baby with its mother is of more than academic importance. All babies should be removed from the possible influence of an early acquired tuberculosis. The prognosis for the baby under these circumstances is very good. It may be mentioned also that there is a possibility of congenital tuberculosis; hereditary tuberculosis is denied. The pre-disposition to tuberculosis of the new-born is remotely possible.

Diabetes and Pregnancy. It has been stated that diabetics do not easily become pregnant. This statement may have been true in the pre-insulin era but at present there seems to be an increasing number of diabetics who are pregnant. Thanks to insulin, diabetes and pregnancy are no longer incompatible. There are, however, certain dangers which may become imminent at any time. In diabetes the patient's whole metabolism is affected; pregnancy, therefore, with its demands and alterations on the maternal metabolism is an added risk. Early in pregnancy the incidence of abortion is slightly increased; later there is danger of intrauterine death or stillbirth. The danger of coma is always present. Diabetics have a tendency to bear oversized babies; it is not unusual for a patient, herself underweight, to bear a nine-pound infant. Theoretically, the maternal hyperglycemia is responsible for the increased weight of the child. Some authors have maintained that the fetal

islet-tissue supplies insulin for the maternal organism and in that way temporarily immunizes the mother to her own diabetes. This is still problematical.

The problem in pregnancy with diabetes is to satisfactorily nourish the patient, maintain her weight, keep the urine sugar-free, maintain the blood sugar value at a normal level, and to prevent coma. This is accomplished by giving weighed, calculated diets of the three important food components, protein, carbohydrate and fat, together with enough insulin to metabolize completely the patient's food, keep her blood sugar normal and the urine sugar-free. Unlike tuberculosis or nephritis or cardiac disease it is rarely necessary to abort a patient during the course of diabetes, because diet and insulin can be adequately prescribed. Most diabetics have no difficulty in carrying out a prescribed regimen; they have already learned to carry out these details previously. The physician may be of further service by having regular routine blood sugar determinations made, and he may test the urine for sugar, acetone and diacetic acid during the regular prenatal visits. These latter should be more frequent with the diabetic patient. With these principles in mind the course of pregnancy can be successfully managed as stated above, but the physician should always be on his guard.

Labor in the diabetic should be as short as possible. Prolonged labor, independent of diabetes, may give rise to an acidosis. Therefore, in diabetes where the tendency toward acidosis is ever present, the physician should be very cautious. During the first stage the patient should be sustained by giving plenty of fluids, fruit juices, insulin and intravenous glucose if necessary. Analgesia may be freely employed; morphine or any one of the barbiturates is satisfactory. If the patient goes into coma be prepared to inject glucose intravenously and enough insulin to take care of the injected quantity of glucose. The delivery may be spontaneous or forceps may be applied if the first and second stages have been unduly prolonged. Cesarean section is not necessary unless pelvic contraction is present. Gas or ether anesthesia may be employed; anesthesia should not be too prolonged, because of the danger of acidosis.

Case 1. Mrs. P., gravida 4, age 28, married six years. Menstrual history began at age 13; normal and

regular; family history: mother living, has diabetes, one sister died of diabetes at age 13; present patient diabetic for 13 years. Previous obstetrical history: 2 months spontaneous abortion, 1930; full term baby, birthweight 9 pounds, 1931; Cesarean section, full term baby, 1933; normal recovery after first operation, wound infection after second operation. Pelvic measurements normal. Patient referred to me in sixth month of pregnancy. Blood sugar normal, urine heavily loaded with sugar. Prenatal visits at two week intervals; urine strongly positive with Haines' solution until within three weeks of term; acetone negative; diacetic acid negative. Calculated diet and insulin prescribed. Patient entered hospital 10/23/35 under observation at term. On abdominal examination baby seemed to be of good size; x-ray examination revealed breech presentation with no other anomalies. 10/25/35 Cesarean section under local anesthesia; sterilization by Madlener technic with additional ethylene anesthesia; baby weighed 8 pounds 11 ounces. On third post-operative day patient developed pain in the chest with the findings of a broncho-pneumonia, right side. The abdominal skin sutures were removed on the eighth post-operative day, skin incision healed perfectly. Patient left hospital on thirtieth postoperative day. This case emphasizes the operative risk on a diabetic patient, namely, the post-operative pneumonia; the patient was sterilized after her third Cesarean section. The two previous sections were done because of large-sized babies and the diabetic condition and it was felt that three Cesarean sections were sufficient in one patient. The patient wished to be sterilized. 12/9/35 urine sugar free; patient not taking insulin; baby artificially fed.

Cardiac Disease and Pregnancy. Much has been written concerning pregnancy and heart disease in the last fifteen years. The entire subject is not definitely settled but certain ideas have been crystallized out. A complete evaluation of the patient's history, symptomatology and accurate diagnosis are necessary before proper treatment can be instituted. While treatment may be carried out along general lines in this group, yet individualization is necessary. Cardiac disease may be broadly classified into two types, first, milder cases associated only with cardiac murmurs; these cases usually cause no great concern and occur with a frequency of about 10%. The more severe cardiac lesions are the mitral lesions, particularly mitral stenosis and mitral insufficiency. The history will reveal in this latter group, a past rheumatic fever, scarlet fever, or a chronic focal infection. It is important to emphasize also that the anatomic or pathologic localization of the lesion is not the sole factor to consider. The effect of prolonged cardiac disease on the heart muscle itself is of

importance and the response of the heart muscle to exercise or exertion is also important. Pardee's classification is very helpful. His classification is as follows:

Class 1. Mild cardiac lesions, quick response after exercise; not expected to give trouble from cardiac insufficiency.

Class 2a. This is the "fairly well compensated" class; slower response after exertion; probably will not give trouble in pregnancy or labor.

Class 2b. Slow or poor response to exercise; this is the "somewhat decompensated" class, may give trouble during pregnancy or labor.

Class 3. This is the definitely "decompensated" class; these cases are serious throughout pregnancy and labor.

The management of pregnancy in all cardiac cases is important. Diagnosis may be difficult from the start, particularly late in pregnancy on account of altered abdominal and chest relationships. Therefore, patients in this group should be seen as early as possible in pregnancy. The cardiologist's services are extremely valuable. Rest is of prime importance throughout pregnancy; intelligent medication may be prescribed when necessary. Digitalization should not be overdone. The whole idea throughout the course of pregnancy in the cardiac patient is to prevent decompensation, to restore compensation where it has been lost, and therefore, to prepare the patient for the event of labor with as competent a heart as possible.

The question of termination of pregnancy might have to be considered early. If termination is necessary it should not be done after the fourth month, even in the most severe grade. Patients who go beyond this period will usually go to term or near term. The method of emptying the uterus, if it becomes necessary, should be the one that will produce the smallest amount of trauma. Even early in pregnancy it is preferable to do hysterotomy and sterilization under local anesthesia if the patient's condition will permit it. If this is impossible dilatation and curettage, under local anesthesia, is better.

Conduct of labor in the cardiac: The duration of labor has been observed to be much shorter in cardiac patients than in normal patients, both in primiparae and multiparae. The reason for this is usually ascribed to the increased

congestion and edema of the cervix, vagina and pelvic floor. Analgesia is very important and should be freely used. Morphine is the drug par excellence; it may be repeated in the first stage if necessary. It may also be used in the second stage. The question of anesthesia must be carefully considered. Ether is a safe anesthetic and can be given carefully by the house staff. Gas when given by an expert is considered relatively safe by some obstetricians, but it should be remembered that the danger of cyanosis and asphyxia is slightly increased. Local anesthesia is practical and satisfactory; spinal anesthesia has been used but this method requires special administration and is not necessary.

The method of delivery: In those patients who can be satisfactorily delivered from below spontaneous delivery may be allowed in the compensated group of patients; forceps should be the method of choice in those patients in whom compensation is questionable. Personally, my choice would be prophylactic forceps in all cardiac patients; one never knows the actual amount of cardiac reserve present in any patient, compensated or otherwise. Cesarean section has been done frequently because of the heart condition per se; this operation is not necessary unless there is a physical obstruction to labor. It has been employed also where it might be desirable to sterilize the patient at the time of labor. From a conservative standpoint these procedures at the present time are not looked upon with favor. My own reaction is that a multipara might satisfactorily be "Cesareanized" and sterilized at the time of labor or even before labor; a primipara in the milder group of cardiac patients need not be sectioned or sterilized unless she so desires. Patients in Class 3 at term should be "Cesareanized" and sterilized. The following cases are cited to show the management during pregnancy and the method of procedure chosen for delivery:

Case 2. Mrs. S., gravida five, age 33, was seen in prenatal clinic in the sixth month of pregnancy. Her pelvic measurements were normal. In 1921 she had an instrumental delivery in her first pregnancy. In 1924, 1927 and 1930, she had normal deliveries; all were short labors, less than five hours. In her fifth pregnancy the diagnosis of mitral stenosis was made. She was advised to take bed rest at home for a period of three months. She entered the hospital two weeks before term for observation for one week. She received practically no medication except an occasional sedative; her heart was well compensated. She was

sent home and returned one week later (12/21/35) in active labor. Her first stage lasted seven hours and twenty minutes; she was given morphine and the interne was instructed to call me when the patient had 8 cm. dilatation. He was further instructed that under no circumstances would the patient be permitted to bear down. Immediately upon complete dilatation of the cervix forceps were applied. A mid-forceps operation was done under combined local infiltration and light ether anesthesia. The second stage was eliminated almost entirely. The patient had a normal, uneventful puerperium and was discharged on the tenth postpartum day.

Case 3. Mrs. H. gravida III, age 22; two previous normal deliveries, 1932 and 1934. Diagnosis mitral insufficiency, 1935, in third pregnancy. Patient was given a prolonged rest period during her entire pregnancy. Entered hospital 8/21/35, at term, not in labor. Patient and her husband requested sterilization. After consultation with the medical department, it was decided that this would be the best course for this patient. 8/22/35 under sodium amylal and morphine premedication, and local infiltration anesthesia, a Cesarean section was done. A sterilization was then done by the Irving technic under additional ethylene oxygen anesthesia. The entire operation required about one hour. The patient had an uneventful convalescence. She was discharged from the hospital on the tenth postpartum day. The follow-up on this patient 9/26/35, involution complete; physical findings of heart were about the same as six weeks before, although patient felt much improved. 10/1/35, pulse 80, regular, slight dyspnea, palpitation, precordial pain, no edema. 2/18/36, pulse 84, dyspnea, palpitation and precordial pain. 3/3/36, much improved, not permitted to do heavy housework. 3/10/36, pulse slow, regular, no congestive failure, digitalis stopped, light work permitted.

Aortic lesions are much less common than the mitral lesions. The general principles previously stated apply here. Where there is syphilitic involvement of the aorta, anti-luetic treatment should be instituted.

Chronic Nephritis and Pregnancy. In most text-books, this disorder is included with the toxemias of pregnancy. While toxemia occurs in chronic nephritis, yet the latter is a definite clinical entity by itself and will be considered similarly with the previous medical disorders within the scope of this paper. Those patients who have chronic nephritis and become pregnant are definitely made worse as pregnancy advances. The amount of kidney damage is irreparable. The past history usually reveals chronic focal infection or scarlet fever in childhood. There may be a history of loss of several previous pregnancies either by abortion, premature labor, or stillbirth. The symptoms are usually persistent

high blood pressure, edema, albuminuria, blurring of vision. Prolonged bed rest ameliorates the symptoms only very slightly. Where the desire for a child is very great, the patient may be permitted to approach the period of viability or term only after the nature of the disease has been carefully explained to her and her family. They should be told frankly that there is no improvement after delivery and that the life expectancy is appreciably shortened. Should it become necessary to terminate pregnancy the following procedures may be recommended: in the first trimester, dilatation and curettage may be done with the advice that no further pregnancies should be undertaken. After the fourth month of pregnancy hysterotomy and sterilization are the procedures of choice. After the period of viability, labor may be induced, bearing in mind the uncertainty of the methods employed in the induction of labor, or Cesarean section and sterilization may be carried out. This latter seems to be the best procedure at or near term. The following case is cited:

Case 4. Mrs. B., gravida VI, age 39, married 6 years. Scarlet fever in childhood. 1929, 1930, 1931, 1932, spontaneous delivery of 6 to 7 months fetuses; November, 1934, spontaneous 3 months abortion. Present pregnancy (sixth) patient due 11/16/35. Since 3/8/35, B. P. 178/100 and continued to rise to 210 systolic and remained stationary. 8/9/35, patient admitted to hospital, B. P. 218/120 on admission. Bed rest, low protein salt free diet, ten days. Blood pressure remained the same; urine albumin 4+; granular and hyaline casts; Wassermann negative. The patient was extremely anxious for a child, having had five previous pregnancies and now in her sixth, with no children. The serious involvement of her kidneys was explained to her and her family; they were advised to have the pregnancy terminated, to which they finally agreed. It was thought on 8/19/35 that the baby might possibly be viable. A hysterotomy was done under ethylene oxygen anesthesia; the baby weighed 1 pound, 13 ounces and lived about ten minutes. The placenta was a mass of infarcts. A sterilization was done by the Madlener method. The patient was discharged on the twelfth postpartum day, B. P. 148/88. Six weeks later the patient's blood pressure 180/120, albumin 4+, casts. The patient was discharged from the clinic with a diagnosis of chronic nephritis and referred to the medical department.

Thyrotoxicosis and Pregnancy. The thyroid gland undergoes some hypertrophy during pregnancy; certainly the hormonal activity of the thyroid is increased. The milder cases of hypertrophy with no symptoms call for no treatment.

Rapid pulse, tachycardia, nervousness, slight exophthalmos, symptoms pointing to thyroid gland disturbance, may call for medical treatment. Such mild cases of thyrotoxicosis do well with Lugol's solution in small doses at intervals. There should also be rest periods in the course of treatment. If the condition becomes progressively worse, prolonged bed rest may be necessary in addition to medical treatment. If the basal metabolism rises to +40 or higher medical treatment may be unsatisfactory. It is rarely necessary to interfere with the pregnancy early in its course. It is better to resort to surgical treatment if necessary at this stage. Later in pregnancy, particularly after the period of viability or near term, the pregnancy can be terminated with greater assurance of obtaining a living baby.

The principles enunciated in the treatment of cardiac cases will also apply in the treatment of cardiac conditions associated with thyrotoxicosis. These need no further elaboration here.

Summary. Pregnancy is not incompatible with such medical disorders as tuberculosis, diabetes, cardiac disease, nephritis and thyrotoxicosis. The application of the principles of medicine to the treatment of the disease which is the primary disorder will permit many patients to carry their pregnancies to term. Where pregnancy produces an unfavorable effect on the disease, or threatens the patient's life, there should be no hesitancy in terminating the pregnancy by the safest procedure and the one most suitable to the best interests of the patient. Individualization and evaluation of the patient's condition and needs are of paramount importance.

CONCLUSIONS

1. Chronic medical disorders are a primary condition in pregnancy; pregnancy is a secondary condition and a complication.

2. The internist's co-operation is highly desirable at all times; the final responsibility rests with the obstetrician or the patient's own medical attendant.

3. Chronic medical disorders are not incompatible with pregnancy, and individualization in treatment is of prime importance to the patient.

4. Follow-up of patients with medical disorders complicated by pregnancy is as necessary as follow-up in surgery for malignant disease.

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DISCUSSION

Dr. C. C. Rentfro, Chicago: Dr. Serbin's paper has certainly covered the subject quite thoroughly. The mortality and morbidity have interested me a great deal in the last few years. I have looked over the morbidity in the hospitals of Chicago; in 1934 out of 2145 morbid cases there were 921 cases of septicemia and 45 cases of contagious disease. In the state of Illinois there were 532 deaths from all types of disease, so that this paper brings to us many of the things that caused these morbidities and mortalities.

In tuberculosis, I think one of the important things in dealing with the tuberculous patient is early diagnosis, therefore a thorough history to find out all about the patient and knowing what you have to deal with. Many of the troubles you get into later are due to an incomplete diagnosis of the condition. What he said about this condition I can do no more than amplify. I think he spoke about the barbiturates in connection with delivery in these cases. I believe they are rather contraindicated in tuberculosis. I would rather use some other form of sedative.

He covered the question of diabetes very well. Probably if the patient has had several children sterilization would be a very good thing if the patient wished it.

One per cent. of all maternal cases are cardiacs of varying degrees. Six per cent. of that one per cent. die sometime during the antenatal or postnatal period. In Philadelphia they reported 39 out of 69 deaths in the last month of cardiac disease, which shows its great importance. Thirty died before the twenty-eighth week. If obstetrics is part of our general practice it behooves us when we get an obstetrical case with one or more of these diseases, to get down the old book and read up. I remember Dr. DeLee saying once, "do

the best you can with a case and when you get a chance read it up in the book."

Dr. Serbin covered these other diseases so well that I merely want to dwell on one in closing, that is syphilis. He just mentioned it. One of the pediatricians was reporting cases of syphilis, and in discussing it later I said if the obstetrician did his work right, the pediatrician would never see syphilis. A number of years ago I did a Cesarean section on patient, and my surgical associate said, "the baby does not look exactly right to me, have you done a Wassermann on this patient?" I said no. In the last three years this woman had had a half dozen Wassermans because she had an accident and the fractures did not heal. I had overlooked an important thing—the husband had a four plus Wassermann. In every case since then the woman has had a Wassermann, and if any trouble arises we explain to her that it is for the sake of the baby. I believe it is important that a Wassermann be done on every patient.

Dr. Ariel L. Williams, Chicago: Concerning syphilis, as a disease which can be complicated by pregnancy, it should be taken very seriously. I do not think we are doing as much for our private patients who might have syphilis as we should. In the past few years by taking routine Wassermans on my patients I have found about a dozen positives in some whom I would never have suspected of having syphilis. There is a movement on foot in Chicago now where the health director is asking all doctors who deliver babies to get a Wassermann. If the patient cannot pay for it herself, the Health Department will do it without charge.

I know the staff of Ravenswood Hospital send their patients in for Wassermans as soon as the patient presents herself for prenatal care. Having found about twelve positive Wassermans in the cases that go to our hospital, I think we ought to take it home for consideration, and also from the fact that the health director is urging our cooperation in getting Wassermans.

Dr. R. W. Doud, Normal, Ill.: I would like to ask Dr. Serbin about the treatment of varicose veins during pregnancy, if he advises injections or otherwise.

Dr. Frederick H. Falls, Chicago, Ill.: I think this type of paper is exactly what we should have at these meetings, because it deals with practical problems. I think Dr. Serbin should be commended for his conservative attitude, particularly in treating tuberculosis. It was not long ago that as soon as a pregnant woman was found to have tuberculosis, no matter what extent of a lesion, abortion was immediately advised. Such cases are being sent to the Research Hospital for me to abort. Before his death Williams reversed his position in the management of these cases because he found that a group of cases that had been aborted in the interest of the mother for tuberculosis did not do as well as those that were allowed to go to term. This was true even in the open cases. In case sterilization is necessary in these cases of tuberculosis, it has been our custom to allow them to deliver and recover and then sterilize them through the vagina under local

anesthesia. The operation is very simple. If there is some cystocele we do an interposition operation. If there is no cystocele, the uterus can be returned to the abdominal cavity.

In diabetes there has recently come to our attention some serious cases of associated hyperemesis gravidarum. In these cases it has been hard to say whether we have two separate conditions, hyperemesis gravidarum and diabetes or whether the hyperemesis was part of the diabetes. At all events when vomiting occurs in these diabetic patients, one should remove the patient to the hospital and put her on the most stringent diabetic regime. We combine with this 30 gts. of Lugol's solution a day which we feel is of distinct value in hyperemesis gravidarum. This may have to be given by proctoclysis or hypodermoclysis.

In heart lesions I just want to bring out the fact that labor is very apt to be relatively painless. Dr. Serbin mentioned that it is apt to be very rapid. One should watch these patients, especially those that are slightly dyspneic because they may go into labor and not know it themselves. In this type of case precipitate labor may occur under unsterile circumstances that may be dangerous.

In nephritis cases, one of the chief dangers that we feel the woman has to face is the loss of the baby. Because these placentas have had numerous hemorrhagic infarcts they are incompetent. As pregnancy progresses a slight additional infarct causes the death of the baby. Clinically, these babies are apparently perfectly normal in the uterus. The heart tones are regular and not too rapid on one day, and the next day examination shows the baby is dead. When a nephritic patient who has been carried through the earlier months arrives at the thirty-second week, we seriously debate whether it is not good policy, especially if the woman is a primipara, or a woman, as Dr. Serbin mentioned, who has lost several babies, to do an abdominal hysterotomy to give the baby the best chance, or at least we put it up to the mother to decide whether or not she wants to take the additional risk.

As regards thyrotoxicosis. We feel that there are many of these patients who are overlooked by the physician. The basal rate in pregnant women who do not show other signs of active hyperthyroidism may be high. These we treat with small doses of Lugol's solution. Active hyperthyroid symptoms have been treated with large doses of Lugol's solution not over short periods of time with intermittent periods of rest but throughout pregnancy, giving ten drops of Lugol's three times a day. There is a difference between the action of Lugol's solution on thyrotoxicosis in the pregnant and non-pregnant woman. We have had patients come into the Research Hospital with basal metabolic rates of plus 110, and curiously enough these patients do not show the typical symptoms of marked cases of hyperthyroidism, but what they do show is hyperemesis gravidarum. We treat them with Lugol's solution and thyrotoxicosis symptoms disappear. We have had surgical as well as medical consultation on these cases. Thyroidectomy was advised by the surgeon,

because it was felt that medical management would be of only temporary benefit. We were told that the patient would go into collapse at about the end of two weeks' treatment, and then operation would be impossible. This collapse did not occur. The patients went through pregnancy, and the hyperthyroidism symptoms disappeared and they improved after the pregnancy was over. Some were subsequently operated on and some were not.

Dr. William B. Serbin, Chicago (closing): If one started to write about all the medical disorders in pregnancy, he could write a book. I hesitated to write the paper because I felt the subject was already sufficiently emphasized, but I am happy to note your interest in it.

In selecting cases, I picked out the most typical ones within the last six or eight months that I remembered well enough and that might have occurred in the practice of anyone of you. When you once make up your mind to do a thing, for example, to interrupt a pregnancy if it becomes necessary, you should have the character to go ahead. It takes great character to empty a uterus in spite of the fact that the family does not want it or that you may not want to do it. There may be strong objections but the patient's interests are always of paramount importance. I have maintained as conservative an attitude as I could. In some cases we are quite radical; in others quite conservative. The ultimate results as far as the patients themselves are concerned are good. Each case must be considered on its own merits.

As far as the barbiturates are concerned, I do not use them, although Jameson mentions their use in his recent monograph.

Syphilis in pregnancy should be considered by itself. I think most of us are familiar with McCord's work. The outgrowth of all that work is that the treatment of syphilis in pregnancy is very satisfactory, both early and late. I do not have the exact number of cases but I can say that in all the cases we had in the prenatal clinic, the social service worker who followed them up informs me that for the last five-year period there was not a single case of syphilis in the newborn.

With reference to varicose veins in pregnancy, although I do not treat them by injection I refer such patients for that treatment. It is reasonably safe to inject varicose veins up to the sixth month of pregnancy.

CONGENITAL PYLOROSPASM

(Clinical Observations)

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During the past ten years, I have been interested in obtaining a better understanding of congenital pyloric obstruction. It has been my

desire to at least improve my own methods of handling such cases, if not to obtain something which might prove to be of value to others. Seven years ago I presented before this state meeting the results of the first three years of this study.¹ At that time I reported in particular my experiences with the effects of irradiation on the projectile vomiting.

During the past seven years I have continued my investigation of this disorder. As a result of this ten years study I have arrived at certain conclusions which have led to the adoption of certain procedures which apparently give more satisfactory results than did the methods which I had used previously. I would like to report my observations in this paper so that other physicians may evaluate them and if they should like, to make use of them.

Atropine, of course, is a time proven remedy for many cases of pylorospasm. I must confess, however, that I do not find it so consistently effective in relieving the projectile vomiting as do other observers. In some cases it does seem to afford satisfactory relief. Therefore, if the vomiting is not too severe, one is justified in giving atropine a fair trial. I prefer to use it if the patient is breast fed, or for some reasons he is on a 3 hour schedule. I also like to give atropine a thorough trial in those cases in which respiratory and/or circulatory disturbances complicate the vomiting. The drug frequently seems to ameliorate the dyspnea or the cyanosis as well as the gastrointestinal disturbance. I do not, however, believe that it is advisable or safe to try atropine for two weeks as some authors suggest. Nor do I seem able to give such large doses without untoward reactions, as some observers report. An atropine urticaria, or fever, is much less desirable in the private home than it may be in a hospital. In the home such a reaction may prove inconvenient if not embarrassing to say the least.

If within 1 or 2 days or at the most 3 or 4 days the vomiting has not been checked or the baby's condition sufficiently improved I usually discontinue the atropine and use phenobarbital instead. If the vomiting is particularly severe, or if the patient shows alarming signs of dehydration and starvation, or if a gastrointestinal colic complicates matters, I believe that better results are more promptly and surely obtained if one begins with the use of phenobarbital rather than with atropine.

¹Read before the Pediatricians' Meeting, Eighty-sixth Annual Meeting, Illinois State Medical Society, Springfield, May 19, 1936.

In 1929 Sauer pointed out the advantages of phenobarbital in the vomiting and colic of infants.² In 1930, Barnett confirmed Sauer's results,³ and in 1931, I reported my favorable experiences with the drug.⁴ In more than six years experience with its use, I have found phenobarbital quite effective in controlling the vomiting and frequently associated colic and hypertonicity, in certain cases of congenital pylorospasm. In certain cases it gives relief when atropine will not. I have seen no unfavorable effects from its use, even though it may be continued over several weeks. In the dosages usually used the drug apparently acts as an antispasmodic rather than a hypnotic. In addition to being more effective in certain cases than is atropine, phenobarbital has the advantage over the other drug in that the effects of an overdosage are neither so alarming nor apparently possibly as serious as may be those of atropine. The baby merely sleeps. Such a reaction is frequently an occasion of pleasure rather than alarm, on the part of the attendants. Should a manifestation of an overdosage thus present itself, all one needs to do is to let the infant awaken, and then decrease the dosage of the drug. However, with phenobarbital as with atropine, unless one gives enough, that is, to meet the needs or to the point of tolerance, one can hardly expect the maximum benefits. Mention should perhaps be made of the adjunctive value of gastric lavage and gavage in those cases where an excessive secretion of mucus may aggravate the vomiting.

When atropine or phenobarbital fail to bring relief the next procedure most commonly followed is preparation for surgical intervention. I have never been able to become sold on such an idea. Hospitals and operations are distressing and expensive experiences for parents. And because the surgeon gets them so late an operation is frequently a very precarious ordeal for the infants. I have always felt a sense of defeat when one of my little patients required surgical intervention to relieve his vomiting. No matter if one believes, as I know that some do, that pylorospasm and pyloric stenosis are two distinct clinical entities, one must admit that the Rammstedt operation makes the pylorus more patent, by preventing muscular contractures as well as by the incision of the tumor. I feel that so long as we are content with this sort of treatment, just so long will we remain ignorant of the cause, a

specific treatment and a means for prevention of this relatively common and at times serious disorder.

In 1931 I summarized my experiences with 37 cases of congenital pyloric obstruction which had not responded satisfactorily to atropine or phenobarbital.⁵ In 33 of the 37 cases irradiation of the upper chest seemed to give satisfactory relief. The condition of 4 of the patients failed to respond to this treatment. A Rammstedt operation was performed upon them. Three of them recovered, and one of them died. Although the irradiation did seem to relieve the vomiting of the 33 infants, I was not satisfied with it as a treatment. That type of therapy requires hospitalization and causes almost as much fear and expense to the parents as does surgery. Furthermore one could hardly consider it a specific remedy. I believed and still do believe that when and only when we have learned how this condition really should be handled, that surgery will no longer be necessary to relieve it, and that we will have found the path towards which the true etiology and a means of prevention will be found.

In 1930, for reasons given elsewhere,⁶ I began to investigate the possible effects of suprarenal and thyroid gland therapy in certain disorders of infants. Among them was congenital pylorospasm. During the past more than 5 years I have administered whole suprarenal gland without or with thyroid to 54 cases of congenital pylorospasm. In each instance the projective vomiting and associated symptoms were relieved promptly and permanently following this method of treatment. Since 1930, none of my cases have required surgery and none of them have died. That is more than I can say of any previous year of my practice. Surely this must be more than a coincidence. Furthermore, each patient has developed normally, and appears to be in better physical condition than is the average of those who I had treated during the previous years. They seem less susceptible to infections and are more free from the so-called allergic disorders to which these individuals seem so susceptible.

Experience has taught me that except where severe constipation exists it usually seems better when the endocrine therapy is decided upon to initially prescribe the adrenal substance. Should the patient's condition not improve satisfactorily within a day or two following the use of suprarenal gland in optimal dosage 0.06 (gr 1), I have

found that combining thyroid with the suprarenal gland seems to invariably and promptly bring about the desired relief of the vomiting. In those cases which are obstinately constipated thyroid alone in the beginning or thyroid and adrenal gland appears to be the better choice. In either case, either preparation may be given in larger doses and given longer, if the other is given along with it.

The dosages which appear to be more effective are 0.03 ($\frac{1}{2}$ gr) and 0.06 (gr 1) of desiccated whole suprarenal gland and 0.008 ($\frac{1}{8}$ gr.) to 0.016 ($\frac{1}{4}$ gr) of desiccated thyroid gland. As a rule when both glandular substances are given better results seem to occur when they are used in the proportion of 1 part of thyroid and 2 parts of suprarenal. Better results also seem to be obtained if the endocrines are given with or preceding feedings. There doesn't seem to be much danger of overdosage. If too large doses are given, untoward effects soon manifest themselves. With the thyroid gland, urticaria, hyperpyrexia, hypertonicity or diarrhea are definite signs that too much is being given. With such warnings being heeded I never have seen any harmful effects of the glandular therapy. I believe with Lisser⁷ and Hoskins⁸ that the dangers of thyroid therapy are grossly exaggerated. As Hoskins⁸ has said, it is doubtful if any other product is less harmful or more valuable.

The clinical untoward symptoms of adrenal gland overdosage are drowsiness, abdominal pain, constipation, or if used alone when marked constipation exists, an aggravation of the vomiting. Because of the prompt appearance of the above symptoms if too much endocrine material is given, it seems almost impossible to harm one's patients. I at least have never noticed any harmful effects in any of my cases.

Experience is rapidly teaching us the value of supplying infants with adequate feedings. I like to think of them as efforts towards complete feedings rather than merely adequate ones. The more concentrated milk formulae and the early added other foods should supply the baby with a greater abundance of the various food elements which may probably be essential to the optimal growth and development of babies. If this should be true for average infants it seems to me that it should be even more true of those in whom a pyloric obstruction interferes with their food intake. That is one of the reasons why I have

long ago discarded the use of thick cereal feeding alone. Breast milk is of course first choice, and every effort should be made to improve and maintain an adequate supply. If one should be inclined to wean his infant patients from the breast because the mother's milk "disagrees with the baby," with the expectations of finding an artificial formula which will relieve the vomiting and at the same time maintain optimal nutrition and development, one will be doomed to frequent disappointments. After a fairly thorough trial of various kinds of artificial feedings, I have come to the conclusion that for all practical purposes, evaporated milk is as satisfactory as any. Evaporated milk is sterile, it is easily prepared, it seems to be as easily if not better assimilated than other kinds of milk. It also has the advantage of being retained and assimilated in relatively large proportions of the various milk components. The use of this kind of milk alone appears to relieve the vomiting in certain cases. However, with this food as with any other, many patients will do better if something is given to control the gastrointestinal spasticity. The frequent changing of feedings "to find one which will agree with the baby" seems to me with this type of patient, to be unsatisfactory and at times disastrous. In my experience, after one has made certain that an adequate supply of breast milk cannot be obtained, if one will feed infants with pylorospasm, suitable proportions of evaporated milk, increasing its strength to the equivalent of whole cow's milk as soon as the patient's condition will permit, give them plenty of vitamins, and as early as possible feed them egg yolk, cereals, vegetables and meats; and if at the same time one will give the babies sufficient amounts of atropine, or phenobarbital, or suprarenal gland or/and thyroid gland to control the gastrointestinal difficulty and therefore enable the patients to retain, absorb and assimilate their feedings in optimal amounts; then, one will find, I think, that the vomiting will practically invariably cease and remain under control, and that one's patients will grow and thrive in a manner which will please all who are concerned.

Although we do not know to what to attribute the effects of the glandular substances it seems to me that the giving of adequate feedings is quite rational. If the action of the endocrines should prove to be that of a drug, the adequacy of the food supply contributes towards the health

of the child. If congenital pylorospasm should prove to be a deficiency disorder, whether the deficient substances be a mineral, or an amino-acid or a compound of both, a hormone or not, the more complete the diet the more it should contain of the essential elements. These babies seem to do better also if they get plenty of cod liver oil or halibut liver oil. Whether this is due to the vitamin content, or some other constituent such as iodine, I of course do not know.

There is just one more thing which I would like to emphasize. That is, that I believe that it is not wise to wait until definite projectile vomiting has set in before taking steps to control the vomiting. I agree with Grulee⁹ that no great strides will be made in the control of disorders of infants until the laity and the profession have altered their attitude of indifference towards the so-called minor disturbances of infancy. For example, there is such a common tendency to ignore vomiting by saying "all babies spit up some." That is not true. All babies do not spit up. I do not believe that any healthy infant who is receiving suitable feedings vomits except occasionally. I feel that repeated regurgitation or vomiting is an indication that something is wrong, either with the nature of the food or the baby, or his environment. Here, as in other conditions early, earnest and intelligent efforts toward prevention may be worth far more than later strenuous efforts to cure. If the vomiting does not cease after the formula has been adjusted to one which a baby his size and age should handle, without any difficulty, and his environment has been regulated, I believe that one should give the patient something to control the vomiting. If one follows such a procedure, one will, I believe, have less trouble with cases of congenital pylorospasm, and with congenital pyloric stenosis.

Summary and Conclusion. Atropine is a time proven remedy for pylorospasm in certain cases. In other cases phenobarbital seems to be more satisfactory. Since 1930, whole suprarenal gland without or with thyroid has given prompt and continued relief in 54 cases of congenital pylorospasm. No case has required surgery. Each is alive and thriving. Adequate or complete diets, seem to be of distinct value to these infants if something is given to aid in food assimilation. An abundance of vitamins A and D seem to be especially beneficial.

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DISCUSSION

Dr. Gustav L. Kaufman, Chicago: In discussing Dr. Barbour's paper, which to me was most interesting, it seems first of all one must distinguish between a true hypertrophic pyloric stenosis and pylorospasm. The true hypertrophic pyloric stenosis generally occurs in the male child in the second to the fourth week of life, occurs rather abruptly and is characterized by projectile vomiting, visible peristaltic waves, palpation of the tumor mass, and a typical type of starvation stool. Pylorospasm may occur from birth to four months of age. It generally comes on gradually and may have all the symptoms of pyloric stenosis, except the palpating of the tumor mass.

In most cases of pylorospasm some food goes through the pylorus, and we are able to recognize the result in the stool examination. In the pylorospasm a mass is not felt, and I believe if one feels a mass one is justified in calling the case a true pyloric stenosis. In my belief, the treatment for pyloric stenosis is surgical and the earlier the operation the better results we have.

Of course, I do not mean we ought not to give the youngster a chance for a day or two, especially if seen early and the youngster is in a pretty good condition, by using medicinal treatment. But I believe when youngsters improve by medicinal treatment one is justified in saying it is not a true pyloric stenosis. Very frequently a false sense of security is obtained by the apparent decrease in vomiting. Often the food remains in the stomach for several days causing a dilatation of the stomach and our criterion should be the stool passed. I believe we cannot stress the stool examination enough.

In our experience, all cases except one or two which had been operated upon, showed a definite tumor mass. Our mortality in surgery is very low, probably less than 2%, the good results depending upon the preoperative preparation, fluid under the skin in all cases and in the very dehydrated youngster a blood transfusion. In our experience in the treatment of pylorospasm we

have had the best results with the use of atropine sulphate dilution, one to one thousand, given twenty minutes before each feeding in large enough doses to obtain physiological effect.

I do not believe in Dr. Barbour's description atropine urticaria, or fever, is any less desirable than obtained by the use of other drugs. It is essential to warn the mother of some of the symptoms atropine may give. I am opposed to using atropine sulphate in respiratory disturbances, especially in atelectasis of the new-born. I believe that phenobarbital may have some advantage at times in treating some cases of pylorospasm, but it seems to me it is much easier to increase or decrease the drugs if you use atropine in drop dosage.

It was rather interesting to note Dr. Barbour's results in the use of whole suprarenal gland with or without thyroid. I can readily see the good results when pylorospasm is found in the generally spastic child. Some years ago we took x-ray pictures of the thymus in all our pylorospasm cases. It was remarkable that most cases at that time showed a hypertrophic thymus which x-ray treatment diminished, and also improved the spasm. At present we are unable to distinguish a hypertrophic thymus in pylorospasms, probably due to our newer knowledge in x-ray technic.

In regard to feeding in cases of pylorospasm, I believe with the addition of atropine, we should give a small amount of food at frequent intervals, giving atropine at about four-hour intervals and food at two-hour intervals. In our experience, next to breast milk and in some cases probably better than breast milk was the use of condensed milk dilution of one to eight or one to ten for a short period of time. I believe with Dr. Barbour that frequent changes of formulae is very harmful in feeding children. When one has results with a certain food it is better to stay with such a food than to make frequent changes.

I want to compliment Dr. Barbour on the results of gland therapy and shall follow his results with the greatest of interest. To me pylorospasm is one of the most difficult conditions to handle both from the standpoint of patient and parent. I am generally relieved when I feel a tumor because with operation we can promise the parent a more speedy recovery.

Dr. Ray Armstrong, Champaign: I would like to congratulate Dr. Barbour on his pioneer work in glandular therapy in a condition probably first described back in 1717 by Patrick Blair. My experience with pylorospasm probably does not date back as far as Dr. Barbour's, but I am sticking with phenobarbital, atropin and thick feedings.

A point brought out which I think is very important is not to switch feedings. We have occasionally had cases taken off the breast simply because of vomiting and various mixtures used which is entirely detrimental to the child itself. The important thing brought out is regurgitation. We find with a good many babies the mothers say they vomit or spit but I think the important thing is to get the history than to merely say they spit up or vomit to some extent.

I must confess that in pyloric stenosis I am not

always able to palpate the tumor mass. If the child is markedly dehydrated or has lost quite a bit of weight it is quite possible to do so, but the history of projectile vomiting, the waves that go across the abdomen and constipated stool are usually quite diagnostic.

Nothing very much has been said about the x-ray treatment in pyloric stenosis. I would like to hear Dr. Barbour's reaction to that. I think the fact that we find a good many of the cases of pyloric spasm returning in different children of the same family seems to put it on more of a nervous mechanism upset of some sort. I think another important thing is early treatment and early diagnosis especially in cases of stenosis.

If these children have this tumor mass which must be operated on they should be operated on early and given fluids and blood transfusion, if necessary.

In connection with atropin, in the hospital I like to use a drop method but in the homes, due to the fact there is sometimes confusion, especially for different attendants, I prefer to use atropin sulphate, grain 0.02 in three ounces of water, giving a teaspoonful about fifteen minutes before feeding. This can be varied by the mother or attendant more easily than by the drop method.

Dr. Julius Hess: I am showing a few slides of the operation, as I think a large percentage of our mortality in this condition is due to either too much or incomplete operation. Expected results depend largely on the pre-operative preparation of these patients. Many are dehydrated and starved on admission and present every indication for hypodermoclysis and blood transfusion. One or more days of preparation is life saving. They should also have a gastric lavage before the operation is started to insure an empty stomach. The child should be fully protected on the table against chilling by the use of warm water bottles, wrapped in blankets to avoid burning.

I had occasion while in Copenhagen some years ago to discuss the treatment of hypertrophic pyloric stenosis with Professor Monrad, Head of the Children's Hospital. He told me they had treated 105 cases of pyloric stenosis without operation. I asked how long they remained in the hospital, and he replied, "Anywhere from six weeks to three months." I asked whether there were any ward infections among the infants. His answer was, "Yes." Some twelve had died of measles. Therein lies the danger of long continued hospitalization. All of us have seen the slow convalescence with chronic dilatation of the stomach and late inanition in the non-operative cases. We usually get them out in anywhere from eight to twelve days and the children remain cured if the patient is well prepared and properly operated on. I am not speaking of pyloric spasm but true hypertrophic pyloric stenosis.

Dr. Barbour has mentioned feeding with evaporated milk. I wish to call your attention to the fact that I believe during the last year I have seen a considerable number of secondary anemias and some infants also showing bone changes, who had been on evaporated milk feedings continuously. I would like to ask your

consideration of such possibilities, secondary to a diet with superheated canned milk products, when they are fed exclusively through the first six months of life without complete protection by the administration of sufficient additional vitamins and iron. It is a question as to whether the super-heated canning and ageing of such foods does not take something out of the milk which the babies need.

Dr. John Bigler, Highland Park, Ill.: The title of Dr. Barbour's paper is pylorospasm, but in the presentation of the paper I do not think he makes clear what he considers the difference between pylorospasm and pyloric stenosis. Any one who has had experience with postmortem examinations of children will have had demonstrated in pyloric stenosis a definite tumor that does not occur with pylorospasm. There is no question but that the treatment of the two conditions is entirely different.

Dr. Barbour has been working for several years, at least, with glandular extracts in the treatment of pylorospasm but as yet we have heard of no other reports on the use of that type of therapy. Everyone still seems to stick with the old time method of thick cereals, condensed milk, atropine, phenobarbital, etc. As far as I know, in disturbances of the thyroid or other endocrine disturbances, especially deficiency of the adrenals, vomiting is not the most prominent symptom as it is in pylorospasm. I would like to have explained what differentiation he makes in the vomiting that occurs with pyloric stenosis, pylorospasm, and the vomiting we see in a great many infants which will clear up without any special therapy.

Dr. Barbour (closing the discussion): There is nothing to be gained by my entering into an argument with Dr. Kaufman about our ideas of pyloric stenosis or pylorospasm. Our opinions represent two distinct schools of thought upon the subject. No amount of discussion is likely to make us agree.

I would like to say just these few words about this much disputed subject. You will probably recall Martha Wollstein's report of her follow-up study of pyloric tumors. I think that her work has not received the attention it deserves. Refreshing our memory, she followed a number of cases, post-operatively and post-mortem, on which a Rammstedt or modification of the Rammstedt operation had been performed. In practically every case she found that the incised tumor had not only not disappeared, but had apparently decreased very little if any in size. To my mind her findings represent positive evidence that the neuromuscular spasticity of congenital pyloric stenosis is of at least equal importance to the tumor itself in the resulting obstruction.

We might argue on into the night concerning the relative merits of various drugs in cases of pylorospasm and would arrive at no agreement. Individual experiences vary and so will individual clinical impressions and interpretations. It is probably better, as someone has suggested, for each one to use that particular drug or remedy which seems more effective in his hands.

In the beginning irradiation therapy of congenital

pylorospasm was associated theoretically with enlarged thymus. Petersen seemed to disprove that theory. His experimental work seemed to indicate that the effects of the irradiation are probably those of non-specific protein reactions.

Last week in Kansas City I listened to Dr. Rowntree's latest report on his experimental work with the thymus and thymus extract. His work seems epochal, and has recently received confirmation. In his paper Dr. Rowntree reported some observations which are particularly pertinent for pediatricians, and apropos of the subject under discussion. He stated that he had collected a number of children who had had x-ray treatments for symptoms supposedly associated with an enlarged thymus; and who were later retarded in development, physically or mentally or both. In order to obtain more information, by using controls he applied the Roentgen rays to the thymus area of a number of rats. If I remember correctly, practically every one of the treated rats were definitely retarded in their physical development as compared with the control (untreated) rats. Whatever the effects of the rays, it would seem that such treatment is not without danger. I asked Dr. Rowntree if some of his clinical cases might have been constitutionally defective before the x-ray exposure. He replied that he believed that some of them were. In spite of the danger, with our present knowledge, he believes that the rays should be used in emergency cases. It would be better for us clinicians to maintain open minds until our knowledge may become more definite.

I am glad to find in Dr. Armstrong a kindred soul who cannot always find the pyloric tumor. Dr. Armstrong brought up the possibility of familial traits in cases of congenital pylorospasm. That I believe is now rather generally accepted. Dr. Rowntree presented experimental confirmatory evidence on the subject last week.

Dr. Armstrong mentioned another important point, the instability of atropine solutions. Because of that instability and the resulting inequality of dosages, when I desire to use atropine, I have found a 1/1000 gr tablet of atropine convenient and more satisfactory. It seems safer to prescribe 1 or 2 or more of these tablets as the case may indicate, particularly when they are to be given in the home, rather than depending on drops from an unstable solution.

Dr. Hess probably is correct about the possibility of anemia with the use of evaporated milk feedings. Because of a similar impression I have been using egg yolk increasingly early in the life of the infants in order to prevent an anemia. I believe that it helps.

I think my answer to Dr. Kaufman somewhat answers Dr. Bigler's question. Regardless of the opinions of the other school of thought I cannot help but believe that the pyloric tumor is an end-result of the pylorospasms.

While it is true that projectile vomiting associated with hypertrophied pyloric muscle may occur suddenly without any warning symptoms being recognized, I know of cases in which warnings were present but

were not noticed. Furthermore, I believe that it is not impossible for the pylorospasms to have occurred and recurred and the muscular tumor to have developed in utero or soon thereafter. The eye opening pictures of intrauterine life presented by Dr. Eastman at the recent Academy of Pediatric meeting in Kansas City, tend to verify this viewpoint. I do distinctly feel that in other cases of pyloric stenosis, the symptoms of obstruction appear mildly in the beginning, and increase gradually in severity with the intensity of the muscle spasms and perhaps with the increasing hypertrophy of the pyloric muscle. In either case, I cannot see how the tumor can be anything else but an end-result. I believe therefore that it is not good practice to ignore regurgitation or vomiting in infants, but that one should make definite efforts to control it.

As to clinical differentiation between pylorospasm and stenosis, I do not think that is ever clear cut in anyone's mind. Even the most ardent advocates of surgical intervention advise a trial of dietary and medicinal therapy before resorting to surgery. As Sauer has put it, an increasingly persistent and recurrent projectile vomiting, visible peristalsis and usually an obstipation indicate a congenital pyloric obstruction. If the symptoms are not relieved following an appropriate diet and the administration of appropriate remedies, and if one feels a tumor, then one may probably be dealing with pyloric stenosis. How many cases with a tumor are or might have been relieved without surgical intervention is not known. Wollstein is the only one, so far as I know, who has taken the trouble to investigate that point. Anatomically, pylorospasm and pyloric stenosis are two distinct entities. Clinically they are not so distinct or clear cut.

I am sorry that time does not permit me to reply to the rest of Dr. Bigler's remarks.

A CONSIDERATION OF SOME OF THE MORE SERIOUS CONDITIONS EN- COUNTERED IN THE NEW-BORN

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The high mortality that continues to exist in the new-born period is sufficient justification for renewed discussion of this subject at frequent intervals. More serious dangers threaten the human organism during the first days of its extrauterine existence than in any other period of its life. It is a period of transition in which sudden and profound anatomic and physiologic adjustments are necessary. The ability of the infant to make these adjustments successfully depends chiefly upon three factors: First, its in-

herent vitality; second, the state of its maturity; and third, the extent to which pathologic processes interfere with normal course of events.

It is obvious that if we are to hope for a reduction in neonatal mortality, a clearer understanding of the peculiarities of the physiology and pathology of the new-born by all those who have to do with its care is essential. This applies not alone to the pediatrician, but as much or even more, to the obstetrician.

I wish now to discuss some of the more serious problems that confront us in the care of the new-born.

Asphyxia. According to Seitz, 3.5% of all infants are born in a state of deep asphyxia. While some cases of asphyxia are due to local obstruction of the air passages, the majority result from a depression of the respiratory center. The factors involved in this state of depression have to do with the oxygen and carbon dioxide content of the blood and the cerebral blood flow. The significant part played by intracranial birth injury in the etiology of severe asphyxia is well recognized. In the premature infant, we have the additional factors of immaturity of the respiratory center and weakness of the muscles of respiration. Keeping these factors in mind, we can more intelligently consider the methods of resuscitation. Before any method of resuscitation is undertaken, it is essential that the air passages be cleared of foreign material by means of a soft rubber catheter. This is most important, not only for the purpose of removing obstruction, but also to avoid the aspiration of this foreign material into the lungs, with the danger of a subsequent pneumonia. What method of resuscitation shall we use is the next question?

(a) Body manipulations are usually more likely to do harm than good and should, in general, be avoided. This is especially true of the Schultze swinging method.

(b) Temperature stimulation, when performed in the proper manner, is a valuable measure for resuscitation. The infant should be carefully submerged in a basin of *warm* water, several degrees warmer than body temperature, while the resuscitator flicks cold water on its chest from time to time. This procedure should not be continued for more than a few minutes, and every care should be taken to avoid chilling.

(c) Resuscitation with air or its constituents.
1. Mouth to mouth insufflation is an old and

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valuable method. Its chief drawback is the danger of bacterial contamination of the infant's respiratory tract.

2. Administration of oxygen and, more recently, of oxygen and carbon dioxide mixtures by various methods is now more commonly in use in hospitals than any other method of resuscitation. Whether the addition of carbon dioxide is an advantage over the administration of oxygen alone in the type of asphyxia we are usually dealing with in the new-born is still a question in the minds of not a few.

(d) The Drinker respirator, as a means of inflating the lungs and mechanically carrying on the respiratory function until the normal mechanism is well established, is now in rather wide use in hospitals. It is an electrically operated negative pressure apparatus equipped with controls for the rate of respiratory movements and for the amount of negative pressure produced. There are certain dangers connected with its use, and the advantages claimed for it are not indisputable. It is expensive and, in my opinion, by no means indispensable.

(e) Medical stimulants in many forms have been tried; of these Alpha Lobelin is the only one that has seemed to stand the test of time. It should be tried in severe cases where a specific stimulant of the respiratory center is indicated.

Intracranial birth injuries constitute the most serious of the pathologic conditions encountered in the new-born period. Intracranial injuries may be due to many factors, and this multiplicity of factors working together must be kept in mind in any consideration of the etiology of these injuries.

1. Direct mechanical influences on the infant's head:

(a) Resistance imposed upon the on-coming head.

(b) Intensity of the pains.

(c) The time of rupture of the bag of waters in relation to the stage of progress of the labor is important in its effect upon these mechanical factors.

2. Disturbances of circulation produced within the cranium during delivery (local congestion and stasis) also ("cupping action").

3. Disturbances of the general circulation during pains which give rise to intrauterine asphyxia and to asphyxial stasis. This is most common in breech deliveries. They may be put

in the form of an equation: Mechanical factors plus asphyxial stasis equals more easily ruptured blood vessels.

4. Friability of the blood vessels and vulnerability of the brain substance. This factor is of particular significance in premature infants.

It is evident from this enumeration of the principal causative factors that intracranial injuries are by no means always the result of faulty obstetrical judgment or skill; it is, on the other hand, also evident that first class obstetrical care for every mother can reduce the probabilities of occurrence of this injury to the absolute minimum.

The recognition of intracranial injury when it occurs, and the institution of proper care and treatment are the next steps.

Many of the asphyxial deaths that occur at birth, or soon after, are due to intracranial injuries. Serious intracranial injury is unlikely if the child has cried lustily after being resuscitated.

Somnolence is a common early symptom. It differs from the sleepiness of normal infants in that the normal psychic reactions are absent (defense reactions, demands for food, Moro reflex). *Flaccidity* is a symptom in the severe cases that die within a short time. *Increased muscle tonus or hypertonicity* is much more commonly seen. *Convulsive attacks* during the new-born period are practically always due to cerebral trauma. There may be only mild rhythmical muscular twitchings or there may be generalized tonic or clonic convulsions. *Respiratory disturbances* are not infrequent. *Trismus* is present in some cases.

While the symptomatology may be quite varied, the clinical picture as a whole is rather uniform; it is dominated by a clouded sensorium and evidences of motor irritation.

The symptoms may sometimes be latent, particularly in the premature.

The treatment consists in good nursing care with emphasis on a minimum amount of handling, the administration of blood intramuscularly to promote coagulation and, finally, the avoidance of meddlesome examinations and treatments. Lumbar and cistern punctures have a very limited value, whether done therapeutically or for diagnostic purposes. When there are signs of marked increase in intracranial pressure (severe convulsions, respiratory difficulties and a bulging fontanel) the removal of 20 to 40 cc or

more of cerebrospinal fluid will often give at least temporary relief.

Atelectasis. Since complete inflation of the lungs is probably not accomplished in the normal infant until several days after birth, there must be a certain degree of physiologic atelectasis for a period of time in all new-borns. Sometimes hindrances to respiration result in the persistence of atelectasis in large portions of the lungs. Continuous or intermittent cyanosis may be the result, and infants thus affected frequently die. Atelectasis, as a cause of death, is a generally accepted diagnosis, and while it is the direct cause of the anoxemia and resultant death of the child, unless we can determine what caused the atelectasis, our diagnosis is not complete. Some of the fundamental causes of atelectasis are: Injury to, or immaturity of, the respiratory center; bronchial obstruction due to aspiration of amniotic fluid, mucus or blood; poorly developed thorax and weak thoracic musculature, as is seen particularly in premature infants. The treatment of severe atelectasis, therefore, must be symptomatic, unless the cause of the atelectasis is known and can be treated. In the main, our efforts are directed toward the stimulation of breathing and administration of oxygen.

Hemorrhagic Disease of the New-born. There is a prolongation of the bleeding time and the coagulation time in nearly all new-born infants during the first three or four days of life. This physiologic peculiarity may assume pathologic proportions and result in more or less serious spontaneous bleeding. While hemorrhage may occur from the skin, the mucous membranes or into various tissues of the body, that which occurs in the gastrointestinal tract is most common and may assume serious proportions. Vomiting of blood or the appearance of blood in the stools is always a danger signal, and calls for immediate treatment. The simple method of giving twenty to thirty cubic centimeters of whole blood intramuscularly, and repeating the dose in twelve hours if necessary, is in wide use and quite satisfactory for the majority of cases. Rarely, there are cases so severe that direct transfusion is necessary. It is no doubt true that many mild cases will be cured spontaneously, but it is not advisable to take this chance when we have such a simple and harmless method of treatment at our disposal.

Hemorrhage into the Suprarenal Gland. It

has long been known that there is a special tendency for small hemorrhages to occur in this gland. Symptoms are usually absent. Occasionally, however, massive hemorrhages occur which give rise to symptoms of shock. The infant becomes very pale and the skin is cold, there is pain on handling and a tumor can frequently be felt in the kidney region. Rupture may occur into the soft tissues of the back or into the peritoneal cavity, in which case death occurs quite suddenly. If, however, the blood tumor does not rupture, the child may live and eventually be quite normal or may have symptoms resulting from destruction of the suprarenal cortex.

Hemorrhage into the brain may also occur and give rise to symptoms almost indistinguishable from those due to birth injuries.

Infections. Serious conditions due to infections occur in the new-born with comparative infrequency in these days of almost universal application of aseptic technic in obstetrics and in new-born care.

Infections of the skin will occur now and then even in well regulated nurseries where strict aseptic technic is practiced. The commonest type of pyoderma consists of a few isolated pustules which may appear anywhere on the body, but are more frequently seen in the inguinal region, flexor surfaces of the thighs, axillary spaces, and in the skin creases of the neck. The skin surrounding the pustules is slightly reddened as a rule. Several small pustules may coalesce to form larger blebs or bullae. Usually the course of the infection is quite benign and unaccompanied by any general symptoms, but in true epidemics an occasional case may exhibit a malignant form and have a fatal outcome. Such cases have large bullae which coalesce into extensive areas of epidermolysis. When this happens, the epidermis may be shed from a great part of the body surface leaving the raw, red, and moist dermis exposed. We call this condition *Dermatitis Exfoliativa Neonatorum* (Ritter's Disease).

Prophylaxis is, of course, the most important consideration in the treatment of skin infections. An appreciation of the delicate texture of the newly born infant's skin, and a realization of the trauma which even the most careful handling, bathing, and clothing must cause is, in my opinion, as essential as good aseptic technic. If trauma is carefully guarded against, the skin will not easily become infected where there is reason-

ably good aseptic technic. Immediate isolation of every infant with pustules is imperative. The active treatment consists of antiseptic baths and the application of various antiseptic solutions to the lesions.

Infections of the respiratory tract are very serious in the new-born, because they spread rapidly to the bronchioles and the alveoli and produce capillary bronchitis and pneumonia. Rapid breathing and dyspnea occurring in an infant that had previously appeared well should always arouse suspicion of pneumonia. Fever is by no means always present. In addition to dyspnea, the infant has a dusky pallor, refuses food and loses weight rapidly. Very little except symptomatic and supportive treatment can be given and the mortality rate is high. Here again prophylaxis is all-important and every effort should be made to shield the new-born from contact with individuals who have common colds or other infections of the respiratory tract.

Infectious enteritis is another serious condition that now and again occurs in epidemic form in nurseries for new-borns, and often with tragic results. Here the infection is due to contaminated milk or other fluids given as food or drink. A short starvation period followed by breast milk alone will usually result in a cure. Here again it is necessary to strictly isolate all infants that have diarrhea and immediately institute a most thorough search for the source of the infection.

Infection of the salivary glands is rare, but occurs with sufficient frequency to warrant consideration. The parotid is more frequently affected than the submaxillary, according to statistics published, but I have personally seen it occur more times in the latter gland. Infection probably occurs by way of the excretory duct from a contaminated mouth cavity. It is usually unilateral, but may be bilateral. Suppuration almost invariably results. Spontaneous drainage may occur through the duct with complete recovery, or the abscess may have to be incised. Recovery is the rule, but general septicopyemia may result with a fatal outcome. Premature infants are more frequently affected than full term infants.

Tooth bud infection is quite a rare condition. The first thing to be noted is a swelling of the lip and cheek on one side associated with fever. On examination of the mouth cavity, one finds a swelling of the alveolar process of the maxilla or of the mandible, usually at the site of the first

molar. Within twelve to twenty-four hours the tooth crown is extruded and there is drainage of thick pus from the underlying tissues. Nearly always there develops an infection of the maxilla, the maxillary sinus is infected and pus drains from the nose on the infected side. Orbital cellulitis often occurs and, if the patient survives, sequestra may be extruded from the infraorbital area or from the bony palate into the mouth. Of the cases recorded in literature, about 50% have recovered and 50% have died from general sepsis.

Septico-Pyemia of the new-born was, before the period of asepsis, one of the most frequent causes of neonatal deaths. Infection gained entrance through the umbilical wound in the majority of cases, quite often through the mouth cavity, when the practice of washing out the mouth was in vogue, and also through infections of the skin. General sepsis is characterized by persistent fever, loss of weight, anemia, often severe icterus coming on late in the neo-natal period, hemorrhages into the skin and mucous membranes, lesions of multiform erythema, and later, if the infant survives the early stage, there may be osteomyelitis in one or more locations.

Icterus Neonatorum Gravis. When an infant is icteric at birth or develops icterus within the first day, we are usually dealing with a serious condition known as icterus gravis. The color becomes progressively more intense until it is a deep yellow-green. The general condition of the infant becomes poor and death usually occurs within four or five days. A constitutional peculiarity may be the cause; more than one child of a family may die from this disease, and recently, some at least of these cases have shown the condition known as erythroblastosis of the new-born. The condition has to be differentiated from congenital atresia of the bile ducts. Blood transfusions may be of benefit and should be given a trial.

Congenital malformations are sometimes very serious, and since most of them are not amenable to treatment, mention will only be made of them.

Congenital atresia of the esophagus and of the gastrointestinal tract at other levels.

Congenital heart lesions.

Hernia into the umbilical cord. This condition if operated upon immediately may be cured.

Brachial plexus injuries almost always subside spontaneously. In some instances where there is

evulsion of the nerve roots, permanent paralysis of the arm results.

Injuries to the spinal cord may occur and lead to permanent paralysis of the body supplied by the nerves given off below the lesion.

Fractures of the humerus or of the femur seem more serious than they really are. In spite of the difficulties of proper reduction of the fragments, healing almost always occurs without deformity.

Prematurity is the most important cause of death in the neonatal period, and deserves to be treated as a separate subject. The general principles of the care of the premature have to do with regulation of body temperature, nutrition and avoidance of infection. In general, the prognosis for the premature infant depends upon the stage of his physiologic maturity, the degree to which his health may have been influenced by the condition which caused the onset of premature labor in the mother, and the kind of care he gets after he is born.

DISCUSSION

Dr. Clifford G. Grulee, Chicago: I think those last remarks are about the most timely I have ever heard. I do not believe one-half of the cases diagnosed intracranial hemorrhage in the newborn are intracranial hemorrhage. I think the vast majority are either cases of edema or cases of agenesis or lack of brain development. Another point which Dr. Parmelee brought out which I think we will have to consider at the present time or in the not distant future is the effect on the child of the use of various sorts of anesthetics and other drugs given to the mother during the time of delivery. The effect on the child is marked in many instances and we must consider that in the use of such drugs the time is coming when the obstetrician is not going to be imposed upon by the mother because she is going to see she will have to stand a certain amount of pain during delivery in order to have a normal child and in order herself to be normal. That was brought out very definitely in the discussion in Kansas City but not brought out from a pediatric standpoint. From the standpoint of the children there are some drugs that are dangerous.

PHYSICAL IMPAIRMENTS OF DEAF CHILDREN

GEORGE L. DRENNAN, A.B., M.D.

JACKSONVILLE, ILLINOIS

The problem of deafness is an important one and has received little consideration from the general practitioner, pediatrician or specialist, until the last few years. For centuries the deaf-

ened patient was considered a hopeless problem. The child of school age, who could not hear, was usually placed in the dunce class or else relegated to a seclusion which made life almost unbearable. In those tender years it is impossible for him to appreciate that he is suffering from a definite handicap. He does not know that the piece of skin hanging in many folds on the side of his head has any purpose other than to provoke daily, or more often, washings, inspections, and scoldings from his mother. Until recently there was no concern, neither child nor parent nor doctor appreciated the seriousness of the condition. Draining ears usually received some consideration, but this was confined to an attempt to stop the discharge.

To such men as George Shambaugh, Gordon Berry, Harold Hays, Karl Menninger, Maurice Sorsby and others we must give credit for focusing attention on the problem and arousing such interest as will in time relieve at least a part of these 3,000,000 unfortunate children.

In a survey of 58 children entering the Illinois School for the Deaf during the present school year we have found that 33 or 56.9% were coming to that institution as a result of acquired deafness and 23 or 39.65% were congenitally deaf. This is a somewhat higher percentage of acquired deafness than is usually found. (2 of this group were not deaf.)

A congenitally deaf child may be the victim of frankly hereditary forces or of an obscure lesion. Graham Bell in 1883, in his memoir on the "Foundation of a Deaf Variety of the Human Race" focused attention on the hereditary deaf-mutism problem. Bell pointed out that more than 50% of the congenital deaf-mutes had deaf-mute relatives. Owing to the constant intermarriage between deaf-mutes, and the fact that speaking and hearing members of such families often have deaf-mute children, he foresaw a deaf variety of the human race. From an analysis of the deaf-mute population of the United States, from the end of the 18th to the latter part of the 19th century, Bell concluded that the congenital deaf-mutes were increasing at a greater rate than the general population. In all forms of congenital deafness, treatment is practically useless. The problem presented is one of education.

It cannot be emphasized too strongly that most deafness is partial and acquired. There is an old adage about there being two types of deafness;

one (curable) is due to wax in the external ear; the other (incurable) is sent to the otolaryngologist. Fortunately this pessimistic teaching is no longer true. But all types of deafness are more easily prevented than cured, and the efforts of prevention of deafness cover the entire field of biological activity.

We are all interested in the etiological factors in these deafened children. The causes in this group are not greatly different from the causes reported by Shambaugh, nor do they vary essentially from those given in my own report in 1932. As in all reports meningitis heads the list—being responsible in this group for 9 or 27.2%; second place is taken by whooping cough being the cause of 6 cases or 18.1%. All those deaf as a result of whooping cough were deafened before 1½ years of age. Third place goes to measles causing 4 or 11.8%. Scarlet fever was fourth causing 2 or 6%. Following these "Big Four" we find a variety of causes, such as, congenital syphilis, undiagnosed fever, mastoiditis, otitis media, skull fracture, head injury, typhoid fever and summer complaint.

It is interesting to note that 73% of this group became deaf before 5 years of age and that 64% were deafened before the age of 2 years. Of those under 2 years of age whooping cough and meningitis were each the cause in 28.5% and measles in 9.5%.

Childhood is rightly regarded as the most precarious period in life as far as the ears are concerned. It is during the pre-school age that the child's health should be particularly safeguarded. The belief still prevalent among many mothers that the young child should be exposed to the infectious diseases of childhood, for example to measles or whooping cough, in order to get it over with is a serious mistake.

The infectious diseases cause deafness in three ways. By spreading infection of the nasopharynx, acute otitis media and all its complications, including acute mastoiditis, may be set up. A blood borne infection may similarly affect the middle ear. A third way is toxic neuritis or meningitis which destroys the inner ear or eighth nerve as typically seen in cerebrospinal meningitis, but not uncommonly seen in measles, scarlet fever, whooping cough and other infectious diseases. Destruction of the inner ear and eighth nerve causes complete deafness and is a rapid process; affections of the middle ear generally subside

without permanent damage, but if neglected may go on to chronic middle ear diseases and all its dire consequences. The control of infectious diseases and skilled aural attention when complications are present will do much to diminish the frequency of deafness from these causes.

This group of 58 children studied from the viewpoint of general physical defects, exclusive of deafness presents an interesting challenge. A challenge which must be accepted by the general practitioner and the pediatrician if we are to accomplish improvement in the general welfare of our children. Ninety per cent of this group showed some physical defect besides that for which they were admitted to the school, 80% showed some defect which necessitated medical attention. These were in order of frequency: 1. Tonsillitis, associated with marked enlargement of cervical lymph nodes, reddened anterior pillars and cryptic hypertrophied tonsils; 2. Malnutrition, sufficient to justify careful attention to weight and diet. 3. Rickets both healing and active, as manifested by the presence of beading of the costochondral junctions, pigeon breasts etc. 4. Rheumatic heart disease. 5. Chorea. 6. Congenital syphilis, and 7, other conditions such as hydrocephalus, curvature of the spine, mental deficiency, and colloid enlargement of a goiter.

Of the group who were deafened by 2 years of age 100% showed other severe physical defects. Careful physical examination of these children revealed the more serious impairments such as rheumatic heart disease, extreme deformities due to nutritional diseases of infancy, such as marked pigeon breasts, and pot belly and dental caries resulting from calcium and vitamin deficiency and the changes in the chest that denote old chronic upper respiratory infections.

It is interesting to relate here a report of one of this group:

J. L. D. Born February 15, 1929, admitted to the school in September, 1935, at the age of six. His mother states that he was a full term baby, born spontaneously without difficulty. She also insists that his infancy was uneventful, cut his first teeth at 6 months, walked at 12 months, and talked at 18 months. He was artificially fed after the first two months of his life.

At 2 years of age, in April, 1931, he had pneumonia and meningitis causing his deafness. In September, 1932, he was run down by an automobile, but suffered no serious injury. In December, 1932, he had scarlet fever followed by acute nephritis. In February, 1933, he had a tonsillectomy and adenoidectomy. In August,

1933, he had whooping cough severely. His mother says the doctor feared he would not recover. In September, 1934, he dropped a match in a tank of gasoline and was severely burned about the face and neck causing considerable scarring. In February, 1935, he had german measles without complications. In June, 1935, he was bitten by a dog with lacerations about the face and arms necessitating anti-rabies vaccine.

Is it any wonder that when this youngster entered school last fall he was undernourished, anemic, had a marked pidgeon breast, and pot belly, that he had marked scarring of the right upper lobe of his lung (all this in addition to being deaf), in fact he looked as though a good strong breeze would blow him away. It is, I believe, providential that he had been immunized against diphtheria and had a negative Shick test, a negative Manteaux test and a normal urine.

This case is described as a sample of the condition of some children when we receive them.

The prevention of these physical defects antedates school age by $5\frac{1}{2}$ or 6 years. Proper care in infancy including feeding, vitamin administration, etc. will do much to improve the health of these babies. Combine this with immunization against those diseases for which we have active immunizing agents, diphtheria, scarlet fever, smallpox and whooping cough and much will be accomplished toward the perfect development of our children. And last, but not least in importance, must we consider early diagnosis of the infectious diseases with prompt administration of antitoxins, vaccines, and antisera in almost every instance. Administration of these agents, if not to effect a cure of the disease, to at least prevent the dire complications which are so frequently more serious than the disease itself.

When compared with the report of G. Koehler of the children in the Springfield, Illinois, Public School system in 1933 we find 80% showing severe defects requiring medical attention instead of the 50% reported by him.

It cannot be emphasized too strongly that it is of greatest importance for the welfare of the child, from the standpoint of his general physical well being as well as his ears, that he be kept in the best possible physical condition. It is not surprising that, proportionately, there are more defective children among the lower classes where nutritional disorders are common and where children are allowed to go out in inclement and severely cold weather with far too little clothing. Knowing that the resistance of a child is of paramount importance in warding off infections, one can readily realize that the nose, throat and ears are easily infected, when the resistance is low.

These defects including deafness, like blindness, are caused by a multitude of diseases, but both are largely the result of sepsis. The great causes of blindness were smallpox, trachoma and ophthalmia neonatorum. These three powers of darkness have been practically stamped out in this country. The great causes of deafness are likewise septic processes, middle ear infections and destruction of the internal ear from infectious diseases. It may be beyond the resources of modern otology and epidemiology to stamp out nasopharyngeal infections and the infectious diseases, but much has been done and still more can be done. Within the province of the general practitioner and pediatrician lies the early infection of the middle ear. Many of these infections need never occur if the nasopharynx of the healthy child is not allowed to become a center of latent sepsis. When the conflagration in the nasopharynx has started and has spread to the middle ear, it is well to remember that it is not a minor condition which is being dealt with, but an insidious threat to hearing and even to life. Much marring of life can be prevented and much happiness brought about by the prevention of the development of acute inflammation of the ear and when that catastrophe has occurred, by preventing it from becoming a chronic menace or an irremediable calamity.

DISCUSSION

Robert Cook, Springfield: Doctor Drennan's paper is interesting because it is practical; it is practical because it points specifically to the causes of deafness and indicates how they may be prevented. His paper merits additional appreciation since it is based on personal observation and study.

When we think of children handicapped by hearing difficulties, we immediately relate the child thus affected to the learning processes. We are frequently told that 80% of our learning comes through the organs of vision, and yet some very good authorities contend that deafness is a disability causing a greater learning handicap than blindness.

It must be evident to all of us that mild and medium hearing difficulties have not in the past caused any great concern on the part of parents; this is possibly due to the fact that physicians have not generally manifested the concern that the condition warrants. It is interesting to note that Doctor Drennan found 64% of children with acquired deafness were thus affected before the second birthday and that 73% before the fifth birthday. These findings are almost identical with the findings of Doctor Shambaugh, who reports that out of 2,014 with acquired deafness, 61% came to this

grief before they were three years of age. It may thus be summarized that the danger zone for loss of hearing is before ten years of age.

Doctor Drennan has pointed to the causes: poor nutrition, poor hygiene, neglect of the nasopharyngeal region, the acute infectious diseases of childhood, fevers of known or unknown origin. It is significant that meningitis heads the list of causative factors among the acute infections and that whooping cough, measles and scarlet fever are, in the order named, responsible for additional high percentages of deafness. This is ample warning for renewed vigilance against the infectious diseases of early childhood.

Our problem may be stated thus: 24,000,000 public school children in the United States; of this number, according to the most reliable surveys, 14% or more than three million have some degree of hearing defect.

The solution of this problem depends first, upon the diagnosis—knowing the causes (these Doctor Drennan has pointed out); second, upon an increased interest on the part of doctors and public health workers; and third, upon greater understanding on the part of the parents.

There is also indication for more thorough testing for hearing acuity of school children. The 4A Audiometer is apparently the device of choice for making these tests and should be in more general use than it is at present. A large percentage of impaired hearing can be helped if remedial measures are undertaken early.

We have parents interested in almost every phase of child health except hearing difficulties to which little attention is paid, but perhaps all that is needed to bring this subject into the open is to place in the hands of the parents a reprint of Doctor Drennan's paper.

The following letter under date of May 8, 1936, from the County School Nurse of Stephenson County to the State Department of Public Health indicates the need for the type of information contained in the paper to which we have just listened:

"OFFICE OF
COUNTY SUPERINTENDENT OF SCHOOLS
STEPHENSON COUNTY
FREEPORT, ILLINOIS

May 8, 1936.

State Department of Public Health,
Division of Child Hygiene,
Springfield, Illinois.

Dear Sir:

Can you tell me where I can secure a good, simple discussion of the causes of defective hearing in childhood?

I would like to either secure reprints of such an article or make mimeographed copies for parents of children with defective hearing. Many of our parents consider defective hearing very lightly if at all. We have distributed material on various phases of child health this last year with good results, and considerable interest has been shown by parents. I think some

material on defective hearing in childhood might bring the parents of these children to a better understanding of this problem and point out the dangers of neglect.

Yours truly,

Martha Specr, R. N.,
County School Nurse."

BREAST FEEDING

CLIFFORD GRULEE, M. D.

Chairman

CHICAGO

The Chairman: In introducing this subject, I want to say I think one of the most abused things in medicine today is the question of breast feeding, abused by not being insisted upon. We have gained the idea because we have learned something about the artificial feeding of children that we can go ahead and feed them artificially with impunity, get away with it and the children will be as well off as before. That is the reason for my statistical chart. Many of you have seen them once or twice before, but I think they do have a certain definite meaning in that they show pretty conclusively that the question of breast feeding does have its effect on mortality of infants in the first place and in the second place that it is not merely the physical nutrition of the child that is important but also its protection against infection.

... Showing of slides of the statistical chart.
...

The Chairman: Objection has been raised to this by some, saying it represented a survey in a poorer class of people and could not be duplicated in other walks of life, but I call your attention to the fact the mortality statistics are just about one-fourth what they are in the whole city of Chicago. That is instead of being about 45 they are 11 per thousand, which shows this group is not in such a bad way from the standpoint of care and nutrition. I believe if we had statistics comparable to this in the better classes we might not duplicate them, but would find the general trend to be very much the same; that is, that breast feeding does protect these children against infection, infection in general, not any one type of infection. Respiratory, gastrointestinal or unclassified infections are all equally affected in a general way by breast feeding.

Round Table discussion at Pediatricians' Meeting, Illinois State Medical Society, Springfield, May 19, 1936.

RELATION TO SUPPLEMENTARY FEEDING IN THE
NEWBORNH. G. PONCHER, M. D.
CHICAGO

There are two medical aphorisms which summarize the basic principles of feeding the newborn infant. Some thirty years ago, Oliver Wendell Holmes declared that, "A pair of substantial mammary glands have the advantage over the two hemispheres of the most learned professor's brain in the art of compounding a nutritive fluid for infants." The text to that aphorism has been supplied by Dr. Grulee. While the dictum was truer 30 years ago, the data presented by Dr. Grulee shows that in spite of our scientific advance it is still true today. The other aphorism is a product of mature reflections of Dr. Abraham Jacobi and expresses in a sentence what I have been allotted 10 minutes to discuss, "In the absence of an adequately secreting pair of breasts the most important ingredient in the infant's formula is the physician's brains."

Cow's milk has been modified in almost every conceivable manner. It has been reinforced with various carbohydrates ranging from starch to the simplest monosaccharide. All of these methods have been used successfully in the artificial feeding of infants when certain basic principles of infant feeding have been fulfilled. They may be briefly restated as follows:

1. The formula should be adapted to the digestive tract of the infant at his particular stage of development;

2. It should contain adequate protein, fat, carbohydrate, minerals, water and vitamins;

3. It should be calorically sufficient and be fed in amounts and at intervals suitable to the individual needs of each infant;

4. It should be bacteriologically safe and chemically clean.

It is apparent, therefore, that successful infant feeding is a matter of the judicious application of feeding principles and not the supremacy of any one formula. The principles elaborated are those found incorporated in successful breast feeding.

The newborn period may present a special feeding problem when breast milk secretion is retarded or diminished or where nursing vigor is diminished by birth trauma or prolonged anesthesia. Boiled water is one of the first articles

added to the diet. There appears to be a divergence in opinion as to whether water should be given plain, with gelatin, with various sugars and salts, or as weak cow's milk dilutions until adequate breast secretion is established. There are the groups who fear dehydration and inanition fever, and in most cases with justification, especially in infants born of primiparous mothers; others who desire to prevent starvation ketosis and acidosis, a few who are combating "birth shock" and still others who treat the product of their own hypothetical speculations. I do not mean to minimize the excellent chemical and metabolic contributions made to the subject of neonatal nutrition but it would appear that such information should be used to clarify our clinical experience rather than replace it. While we would all readily admit the necessity of preventing dehydration and its sequelae, no one has yet presented unequivocal evidence that an excess of fluid in the tissues is any advantage to the newborn infant. Yet, recent investigations have shown that many of the hydrating solutions advised for the newborn do that specific thing.

Time does not permit a thorough discussion of the subject of pre-lacteal feedings. That carbohydrate is desirable after the first 24 hours in the newborn period was indicated by the studies of Murlin and his associates on the respiratory quotient of the newly born. The choice of the carbohydrate used in the mixture seems to make very little difference except that sweet sugars tend to take away some of the zest for breast feeding. The concentration of sodium chloride or citrate in the mixture will determine whether the tissue hydration will be expressed clinically as generalized edema or a superior weight gain. For those who prefer a hydrating salt in addition to water and sugar, attention might be called to the fact that they have an excellent source in colostrum. (The sodium content of colostrum is about twice that of mature breast milk).

The entire subject may be summarized by stating that any method of pre-lacteal feeding is desirable that prevents dehydration and hypoglycemia when the conditions for their development are present and that does not send the infant to the breast with the feeling that it is a marked contrast to the easy flow of nutrient from the bottle. The latter stipulation is important for many babies have been unnecessarily weaned from the breast because of the injudicious use of the

pre-lacteal feeding. If we admit the truth that breast milk is the most desirable nutrient for the newborn, then our chief aim should be to conserve the maternal milk supply. Since our best galactagogue is a vigorously nursing infant, any measure which defeats this nursing vigor is an unconscious gesture at weaning. The question of feeding the newborn resolves itself into basic principles and not in the adoption of any favored solution or formula. Any feeding method undertaken with a clear vision of the ultimate goal of the infant's nutrition will be successful. The proof of the latter statement is attested by the fact that newborn infants thrive in all parts of the world with varied feeding methods in the hands of intelligent physicians.

It would seem, therefore, that the most vital factors in the successful feeding of the newborn are the integrity of the mammary glands of the mother and, in their failure, the cerebral cortex of the physician.

The Chairman: I might say in discussing this presentation of Dr. Poncher that for the last six years at the Presbyterian Hospital Dr. Sanford, of Chicago, has been making studies with respect to things that influenced the question of breast feeding in the mothers. Our attention was called to this largely by the fact that we found the mothers of the outpatient newborn had a very much larger proportion of children on the breast at the end of the lying-in period than did the ones in the hospital. We started out in several different ways. One of them was by giving the babies full feedings, complemental feedings, then nothing at all. Finally, for the last two years, they have been given nothing but water. We found that not only does it not affect the weight curve materially except to cause a lower dip and more rapid rise but that our number of breast feedings has increased as far as we can estimate (now inaccurately) from about 40 to 85 per cent.

PUBLIC HEALTH POINT OF VIEW

HENRY C. NIBLACK, M. D.

Chief, Bureau of Child Welfare, Board of Health
CHICAGO

Along with the typhoid rate, the infant death rate is one of the chief criteria of the efficiency of the health service of a community. Therefore believing as we do and as Dr. Grulee has shown, that breast feeding is one of the most important factors in protecting the health and lives of infants, health organizations, both public and private, are vitally interested in this type of feeding.

From the public health standpoint, promotion

of breast feeding is an educational procedure. In this procedure these factors are concerned: the educators, applying certain subject matter through various methods, to the subject, with a hoped for result in view. In this instance the educators are the physician, whether he be obstetrician, pediatrician, or general practitioner, the nurse, the social worker, the hospital, and other agencies such as the infant welfare conference; the subject matter is breast feeding, in the teaching of which there are as many methods and as many varying degrees of knowledge and enthusiasm as there are educators; the subject is the mother—and the baby, because the baby, as well as the mother, must be educated; the result is usually a confused mother and a bottle-fed baby. What else can be expected of an uninformed mother placed in the midst of these impinging and conflicting opinions and methods?

I am glad that one speaker stated this morning that we, the physicians, are a part of the public health fabric. I think it is we who must assume the chief responsibility. In speaking of the part of the hospital, I realize that it is impossible to separate the responsibility of the hospital from that of the attending staff; but there is a definite attitude in the atmosphere of the hospital felt by the mother that helps to influence her course of action. If every one in the institution believes in breast feeding, talks breast feeding, and if breast feeding is actually carried out, the mother develops the same spirit and enthusiasm.

The interns and student nurses are affected in a like manner. They are not trained to teach mothers the art of breast feeding; they are not led to have any strong conviction in the matter; they go out to practice; may become, in turn, members of the hospital staff, responsible for the training of following groups of interns and nurses; thus a vicious circle is created.

I am interested in the infant welfare activities of the official public health organization of the city much in the same way that Dr. Grulee is in those of the private organization. We have a group of attending physicians and nurses carrying on much the same type of work in the same way. We hold these physicians strictly responsible for keeping the babies under their direction breast fed. We cannot check every baby registered, but we can check the deaths. If a baby dies and it is found not to have been breast fed,

we want to know why; if that baby had been taken off the breast, we want to know the indication.

The infants' records are kept on colored charts; the yellow indicating breast-fed babies and blue, artificially fed. We expect a file to be predominantly yellow; if there are too many blues, we expect an explanation. When these matters are taken up with the attending physicians, their argument is: "The baby was put on a bottle in the hospital and so discharged; when the baby is registered he is already in the habit of having a bottle, and the mother of giving it." Overcoming the bottle habit of these two individuals is most difficult.

I am sure that too many babies are being discharged from the hospitals on unnecessary bottle feedings. In many instances giving these feedings is a matter of nursery routine; formula number one, two or three, being given to the infant at the discretion of the nursing staff. The physician must personally assume the responsibility of directing the feeding of the new-borns and determine the policy of the hospital regarding the procedure. There has been too much stress on the idea that there must not be an initial loss in weight; this unjustifiable fear is responsible for many artificially-fed infants.

A year ago we made a city-wide survey of the breast feeding situation from the standpoint of the hospitals; that is, we wanted to find out, as accurately as possible, what kind of feeding babies were receiving when discharged from the hospital—if the infant welfare physicians were justified in their contention that the hospitals were responsible for the great number of artificially-fed babies. In Chicago, a nurse from the Board of Health delivers to the mother a notification of the registration of the birth of her baby, usually about ten days to two weeks after the baby's birth. At the time of this call the nurse obtained the following information: Name and address, baby's birth date, whether born in a hospital or at home, and the name of the hospital. She also ascertains whether the baby was discharged from the hospital wholly breast fed, mixed, or artificially fed.

A study of the data showed that 6,665 infants born in hospitals had been contacted; of these 3,736, or 56%, left the hospital wholly breast fed; 1,939, or 29%, mixed, and 991, or 15%, arti-

ficially fed. There were 2,650 infants contacted that were born in the home; of these at the time of the call, 2,135, or 83.7%, were still wholly breast fed; 203, or 8%, were mixed, and 212, or 8.3%, were artificially fed. In the different hospitals, the percentages of wholly breast-fed infants at the time of discharge ranged from 30 to 90%.

There were other interesting and rather surprising things shown. Hospitals that were expected to have a high percentage of breast-fed infants were low; some that were expected to be low were high. The high record went to one of the smaller, less known, hospitals handling a majority of mothers of foreign extraction. The hospital next highest was one handling all colored patients. The lowest hospital was one of the best known and whose clientele is from the wealthiest class. The large, exclusively maternity hospitals all fell into the lower 50%; this was also a surprise. One physician casually remarked that the women delivered in his hospital did not want to nurse their babies, so the babies were put on bottle feedings by the staff before they were discharged.

One more word relative to breast feeding in the infant welfare conferences. Conferences attended largely by colored mothers shows a registration of babies over 90% breast fed. These mothers still take breast feeding for granted. Dr. Grulee's organization has a somewhat higher percentage of wholly breast-fed babies than ours; our stations are more outlying and in somewhat better neighborhoods. It seems to follow that the higher class a neighborhood, the fewer the breast-fed babies. This is strikingly illustrated (I think Dr. Blatt and Dr. Parmelee will pardon my mentioning the hospital in which they are especially interested) by the Cook County Hospital; over 80% of the babies born in that institution went home breast fed.

No wonder the more prosperous mother is confused. During her stay in the hospital she has been given no clear-cut idea of what she ought to do or how to do it. She receives all kinds of educational literature; much of it good, such as that sent out by public health and medical organizations, the Children's Bureau, and other child welfare organizations. Then she picks up any one of the popular magazine's especially the women's publications, and what does she see?

From the pages there smiles out at her those superbly beautiful and healthy babies that are the result of various artificial feedings. She wants a baby just like that, right away. She also has noticed that her friends are having a seemingly easy time with their babies on bottle feedings. Then she starts in to convince her physician that she cannot possibly nurse her baby—and too often succeeds. Worse still, she may go ahead and put the baby on a bottle without consulting any one. However, I cannot resist making one encouraging comment at this point; we really are getting away from the complicated formulas of a few years ago and getting back to simplicity in formula preparation. I hope we shall eventually reach the ultimate in simplicity—breast feeding.

I believe that most mothers want to nurse their babies—at least they say they do; but no matter how much a mother may seem to want to nurse her baby, she is usually also sure she cannot; and the physician feels about the same way; he believes in breast feeding but agrees with the mother as to her ability; the result is a complementary formula for the baby who is soon completely off the breast.

I would like briefly to tell you just a little of what we, as a public health organization, are trying to do to create an interest in breast feeding and to get the majority of the infants born in the city back on the breast.

First of all, we believe in breast feeding. We not only believe it is the best way to feed a baby, but believe we can teach mothers how successfully to carry out the procedure. In our attending staff especially we have undertaken to build up this belief and are training them how to teach mothers to keep their babies on the breast. There is one best and accepted method. I think, for providing breast milk and this is where the baby comes in. The baby has to learn to forage, to a certain extent, for himself. With our complementary mixtures we have been making life too easy for him. There is no better stimulation for a mother's breast than a hungry baby. If he is hungry, he will nurse, and if he is getting even a small amount he will keep at it, and if he keeps at it the milk will come. The difficulty has been that we have weakened before the breast attained sufficient productive capacity to support the baby.

We are teaching our nurses the best method of supplementing the baby's efforts in developing

and maintaining a breast milk supply. This is by manual expression. There are so many methods that I shall not go into that. Certainly manual expression is best. There is no pump that compares with it in simplicity and effectiveness.

If we, who are responsible, namely, physicians, nurses, and hospitals, present a united front, we shall get these mothers in a frame of mind that they will not only want to nurse their babies but will believe that they can—and will.

The Chairman: In some hospitals the babies are breast fed and in some hospitals they are not, because in some hospitals the nurse has not time to put the bottle in the baby's mouth and in other hospitals she has. If you can get your nurses to agree they must not give the babies a bottle until they are absolutely ordered to do so and not be insisting that the baby be given something to eat because the poor little thing is starved to death, you will not have so many artificially fed babies.

BREAST FEEDING FROM THE STAND-POINT OF PRACTICE

GERALD M. CLINE, M.D.

BLOOMINGTON, ILL.

No doubt the subject of my part of this round table conference will probably remind some of you, as well as myself, of statements made by several general practitioners namely, "*Why don't you practice what you preach.*" During the last ten years, on two different occasions, *our medical society has sponsored professional and lay educational groups* in the advantages and technique of breast feeding. I am sorry to say the results of these efforts were discouraging. *The idea is right*, we must admit, and there is a technique, but so often it is easier during the busy hours of the day to prescribe a formula than to spend the time with the mother in an educational program for her, and therefore we do not "*practice what we preach.*"

About the middle of March of this year I had the privilege to spend a few hours scanning over several old books from a library of a famous doctor of medicine who practiced in the days before the Civil War in Alabama. One book of particular interest was "*A Practical Treatise in the Management and Diseases of Children,*" by Drs. Evanson and Maunsell, published in Philadelphia in 1843. These authors wrote quite at length on "*The Management and Food after*

Birth." The following quotations from this chapter are still very true and practical today:

Very few children in this country are fortunate enough to escape being dosed with castor oil, immediately upon their arrival in the world; and many are obliged to undergo the additional peril of having a quantity of calomel forced down their throats. Neither of these practices, however, is constantly necessary, and the last is positively injurious. We are, however, decidedly of the opinion that it is better and more natural to allow our infant to sleep quietly for five or six hours after birth and not before that period disturb it or irritate its stomach by anything whatsoever. The mother's colostrum is a purgative. Should the mother be able to supply the natural nutriment at the end of eight or ten hours, or even earlier, as is often the case, we think the infant should then be applied to the breast; and it is highly desirable to avoid giving, in the interim, any other food whatsoever. Should the secretion of the milk not be perfectly established for two or three days, Professor Jorg recommends that nothing should be given but a few teaspoons of lukewarm water. Notwithstanding this, however, should it not be practical to have the child suckled within ten or twelve hours after birth we think it advisable to insist immediately upon a nurse being procured. Requirements of a good nursing mother or nurse are even temperament, rest and a diet of wholesome food of easy digestion and water as a drink."

True it is then that breast feeding is an old, old story and today, with our newest methods of artificial feeding, nothing has taken its place completely. In carrying on an educational program for the mothers, certainly the medical profession should be included. Particularly at the doorstep of the general practitioner and the obstetrician, the program should begin. As the pregnant mother presents herself to the physician for examination, certainly the breast feeding story should be told, which should consist of the following paragraph headings:

1. Breast feeding is the natural way.
2. From the standpoint of the baby, it is the safer way.
3. From the standpoint of the mother, it is the easier way.
4. Breast and nipple stimulation. This should begin several weeks previous to her delivery by applying a lubricant to the nipples and rolling them gently between the thumb and fingers to secure pliability. This helps to make the nipples more prominent and, together with the breast pump, is very useful in the treatment of depressed nipples. Breast and nipples should be kept very clean with soap and water. Sterile vaseline or coco butter are satisfactory lubri-

cants. More of the young mothers of today than ten years ago are expecting some service like this from their doctors. It will pay you dividends in bringing others to you.

After birth the burden still remains with her doctor, unless they choose to call in a pediatrician, and certainly not with the nurses or head nurse of the obstetrical department, as is so commonly done in smaller hospitals. You will agree with me that if a nurse should give a hypodermic of some narcotic to the mother without orders she would be severely reprimanded, yet often she is forced by the doctor or by the neglect of the doctor to supervise the after care of the baby who is the most precious and valuable possession these parents will ever have. I dare say the narcotic would probably not harm the mother, but the heavy milk formula taken from a complementary celluloid card or chart, stuffed into a baby's mouth with a long, easy-flowing nipple, will most often ruin any plan for breast feeding and at times cause serious gastric disorders in the newborn. This is especially true if given routinely early. Therefore, upon the hospital care of ten days to two weeks lies the success or failure of breast feeding. The important items of technique here are:

1. Intelligent nursing care of the mother, which includes rest, absence of visitors, cleanliness, together with the prerequisites as quoted from Drs. Evanson and Maunsell, namely: even temperament of mother and a diet of wholesome food and water.

2. Periodic stimulation of the breast by the infant at intervals of from three to four hours. Needless to say, the mother's milk does not secrete for from forty-eight to seventy-two hours after birth. Warm water, or I prefer 5% dextrose solution, should be given after the nursing period every three to four hours until the mother can supply the needed quantity.

Usually after eight hours, after the mother has recovered from the fatigue of labor, I advise applying the baby to the breast for five-minute nursing periods for the first day. By the fourth day the infant is usually nursing fifteen to twenty minutes on the single breast and taking one to two ounces of the 5% dextrose solution after the feeding. As the breast milk increases, the dextrose solution is omitted.

I will pause here to explain why I prefer this routine. First of all, the short nursing periods

at the onset do not tire the mother or child. They also allow the nipples to become accustomed to the trauma of the suckling baby. The dextrose solution is particularly advised because the caloric value is low and the amount does not fill up the baby's stomach with food, causing it to become lazy and satisfied without the effort of nursing. Also I am entirely convinced that many babies, who I feel are allergically inclined, so to speak, if fed cow's milk early are definitely sensitized to the protein of cow's milk during the first few days of life, the results of which are oftentimes the eczemas and asthmas and hay fevers of later life. There is no sensitizing protein in dextrose solution.

The prenatal and postpartum education and care having now been outlined brings us to another important period to be considered in the success of breast feeding; namely, second to fourth week of the baby's life, or the time when the mother returns to the home with her offspring. Here, I believe, even temperament and rest of the mother plays its greatest part. Relatives and neighbors, of course all well meaning, are in my mind the greatest disturbing factor. The mother for the first time realizes her responsibilities and her fears and shortcomings. Outside suggestions and advice are abundant. Rest and fluids for the mother are lacking; milk supply diminishes rapidly and the infant soon registers his wants by his instinctive cry. Hunger is the answer. The baby has his so-called colic evidenced by a painful cry and greenish, curdy stools. Certainly at this period great care is needed; the mother needs her doctor's intelligent support. The same mother returned to the hospital for a few days or put to bed at home with a good nurse in attendance oftentimes at this period will restore what seems to be a hopeless procedure. On a few occasions where I have been a part of the program from the beginning. I advise after the birth a good nurse at the home for two weeks and the student nurses at the hospital. I am sure this will increase the number of successful breast fed babies.

As time goes on, this mother will still need the physician's help. Kind and prompt attention to her questions as well as planned future programs for her to follow make for a larger successful practice, a healthier child and a happier home.

In conclusion, I am willing to admit that these

ideas may read well; that, try as you may, there are many cases in which for various reasons as mentioned by other members of this conference these ideas can not be successfully carried out. We will and must be prepared to advise complementary and supplementary feedings for many babies. However, the pendulum has swung too far away from the safe and natural way, and we as physicians are solely responsible for its return.

GENERAL DISCUSSION

Dr. F. E. Inks (Princeton): All four of the discussors, in my opinion, have omitted to emphasize one of the most important points on breast feeding. That is the care of the nipples. If you can get the mother's nipples in condition so they are not sore and she will not be afraid to nurse the baby, it will be much easier. I have found the patients whom I take care of have nipples which are not so sore if instead of having the nurse wash them with a little piece of cotton I insist that each nipple be washed with soap and water, cleansed with clear water and when the baby is nursing that nipple again be washed with soap and water and thoroughly dried. Of course, I do not see as many as most of you, but I do my own obstetrics, and see about 50 a year. I think if the nipples are thoroughly cleansed and if you start nine months before the baby is born to teach the mother how to take care of the nipples and dress and bathe her baby when it does come you eliminate much of this difficulty.

The Chairman: I think that is an important point. What we have laid stress upon is the psychological attitude of the public and the doctor. We have tried to persuade them what the psychological attitude should be. We should not neglect the physical measures which will bring about the effect we want to produce and the care of the nipples is certainly one.

Dr. W. E. Carnahan, Macomb: Not only is the doctor at fault but our teachers are at fault. I recently read a new three volume work on obstetrics in which the very definite statement is made, that prenatal care of the nipples has no influence whatsoever. I would like to see stressed, also, the training of the mother on diet to produce milk in the mother who loses her milk supply.

The Chairman: In the first place, we are not responsible for the obstetrical text-books. I do not think you will find such in books on infant feeding.

Dr. Carnahan: As a specific example, a young mother came to my office yesterday; she had gone home from the hospital on the eleventh day with a good milk supply. This milk supply continued until the baby was approximately eight weeks old. Two weeks ago she noticed that the baby was not doing so well, was crying more, and that its weight had become stationary. From her telephone conversation I was satisfied that the baby was not getting sufficient food. On going into the history yesterday, I could find absolutely nothing to account for her loss of milk supply.

Is there anything I can do to bring back that milk supply eight weeks after the birth of the baby?

The Chairman: Most people do not realize that breast milk is a secretion and therefore subject to the effects which all secretions are subject to, and that the matter of diet is only one of the factors in the situation. We all know that secretions of the stomach and secretions elsewhere are affected by the mental attitude. We all know that a shock will temporarily, sometimes permanently, reduce or even cause a cessation of the flow of breast milk. I do not know of anything that will make breast milk come back when the breast is starting to go. I do think many of these cases are definitely on the basis of a psychological reaction, that if we got right down to the basis of things we will find that something is worrying that mother. If it is not a sudden change but is a slow change then it is probably a matter of inheritance.

I want to say it is not without importance to nurse the baby even if it is only for the newborn period, if we only nurse the baby one month or two months; it is better often than if the mother does not nurse it at all. I know of no diet that will get results. I do know many women cause their breast milk to disappear by dieting, because they think they have to fill themselves up with a lot of milk in order to make breast milk; this may cause gastrointestinal disturbances and their breast milk disappears. There is nothing to be said about the diet of these mothers other than they should have sufficient diet.

I have also had results another way. I do not know why, but in the days before prohibition when a mother did not have a very good breast milk supply, I used to see she got a quart or two quarts of beer a day. I do not know whether it rather steadied her nervous system or whether it had some specific results, but apparently I did get results.

Dr. Arthur H. Parmelee, Oak Park: I am not going to advocate beer, but I do think giving mothers beer is better than stuffing them with milk, chocolate and cocoa.

What I wanted particularly to say was that the most important factor in keeping up the breast milk supply is stimulation. One of my peevish is the practice of letting the baby go through the night without nursing at the breast; this I think is unphysiologic and unfair. I think the baby during the first month should be taken to the mother every four hours throughout the twenty-four hours. They will demand it when they get home and the small amount of extra rest the mother gets in the hospital is of little importance. She is more comfortable if the breasts are emptied at regular intervals.

I would like to mention the practice I have used for a good many years. After the nipples have become accustomed to being nursed upon and there is little danger of their being irritated by too much nursing, I let the baby nurse at both breasts at every feeding. I have done this consistently in every case for at least the last fifteen years and have not reverted to the practice of alternate breast nursing. It is more physio-

logic. When you stimulate one breast you stimulate the other and start something you do not finish unless both breasts are nursed from. The farmer does not milk on one part of the udder at one time and the other part of the udder the next time, but milks all four each time. The breasts should be stimulated in exactly the same manner, in my opinion.

INJECTION TREATMENT OF HERNIA

W. M. McMILLAN, M. D.

CHICAGO

The object of this method of treatment of hernia is to produce an artificial proliferation of fibrous tissue without suppuration, which will close permanently the defect in the abdominal wall through which the hernia protrudes.

For more than one hundred years attempts have been made to accomplish this object, but unfortunately many of the efforts have been made by men unfamiliar with anatomy and asepsis, and by quacks who employed such foreign bodies as high melting point paraffin to obstruct the aperture. Velpeau of Paris as early as 1835 used irritants with apparent success to cure hernia. Heated instruments have been used to cauterize the surface of the canal in inguinal hernia, in the attempt to obliterate the defect by scarring and subsequent constriction. Extremely irritating solutions have been injected carelessly into the abdominal wall near the hernia, sometimes without the patient's even wearing a truss. Disastrous results have followed, causing the medical profession to look with a jaundiced eye upon any endeavor to treat a hernia by injection, and the public has had good reason to fear the many complications which have occurred, such as peritonitis, fecal fistula, gas gangrene, and even death. To this may be added the statement that many unethical men have sold and are now selling worthless solutions and making extravagant claims for their value, thus further prejudicing the medical profession against this treatment. Although some criticism has been leveled at this treatment because of the claim that it is impossible to blindly inject this area accurately, it has been found that in cases in which methylene blue is injected, and the patient subsequently operated upon, the methylene blue has been deposited quite accurately in the area for which it was intended. Another interesting observation is

that when the external ring is injected the methylene blue is seen to travel along the lymphatics to the internal ring, thus spreading through the entire area of the inguinal canal.

About three years ago I first became interested in this study, and observing the excellent work of Drs. Bratrud, McKinney of Minneapolis and others, I decided to investigate this method. Following the successful use of the method over a period of a year the opportunity was afforded to make a study of it at Northwestern University Medical School both in the experimental laboratory and clinically. By the use of experimental animals the results were studied following the injection of various irritants at different locations. Several solutions were discarded as producing no reaction or too severe a reaction, and two solutions with the following contents were selected to be used clinically:

Thuja Solution containing Phenol 30 c. c.

Grain Alcohol 15—Lloyds specific Tincture of Thuja 15.

I. Tannic Acid solution.

This solution is used in three different strengths.

It is a distillate solution prepared by distillation of the tinctures of a group of tannic acid bearing herbs to which the following ingredients are added:

Benzyl Alcohol—3%

Thymol—0.5%

Reagent grade natural tannic acid is then added to make the resultant solutions assay "A" solution— $\frac{1}{4}$ % tannic acid, "B" solution— $\frac{1}{2}$ % tannic acid and "C" solution—1% tannic acid.

These solutions were injected in doses sometimes two to three times that to be used in the human and the injections were made at the following sites: the blood stream—directly into the abdominal cavity—the spermatic cord—the testicle—and the fascia about the inguinal canal. There were no fatal reactions and aside from transient respiratory and blood pressure variations the only reactions noted were tissue changes without necrosis, except those animals in which these solutions were injected into the abdominal cavity revealed on opening 10 days later a discrete area of necrosis with beginning healing. The microscopic changes so far as those occurring in the fascia about the inguinal canal will be described later in detail by Dr. Cunningham, who aided me in this work. I would, however, like to say here that there was

no tissue necrosis and there was new fibrous tissue production which went on to form firm permanent tissue with only partial absorption.

No atrophy of the testicle was noted either when the solutions were injected into the spermatic cord or directly into the testicle although here as in the fascia inevitable changes took place as will be described later.

In selecting cases for treatment the following conditions were considered to be contraindications: sliding hernias, incarcerated irreducible hernia, hernias associated with undescended testicles, hernias where the defect was obviously too large, diseases producing ascites, markedly enlarged prostate, chronic severe coughs, hemophilia, syphilis and toxic goiter. I might add that patients who were not relieved of all symptoms by wearing a truss as well as neurotics were not treated by this method. All patients were carefully examined for any sign of strophy of either testicle before treatment was instituted. It is surprising the number of patients presenting themselves for relief of hernia who have such atrophy, our experience showing about 8%.

Considerable trouble was encountered at first with trusses but generally we found that in selecting a truss the pressure must be applied anteroposteriorly and not circular—a special spring type with a non-skid pad is therefore the type we are using. This truss must hold the hernia reduced at its point of exit at all times, and should be fitted sufficiently firmly to produce an actual depression in the skin without damage thereto. It is at once apparent that with an indirect inguinal hernia the pad must be placed high over the internal ring, and with a direct inguinal hernia it is placed lower over the external ring. Failure to observe these details and application of a proper truss will result in inability to cure the hernia. (I might say that the fitting of trusses now is largely in the hands of drug store clerks.) The truss must be worn day and night for one to two weeks before treatment is started. The purpose of this is to prevent interference with the treatment after it is once instituted due to skin irritation, and most important of all to be sure the hernia is reduced and can be continuously held so. After treatment has been carried on for one to two months the truss may be removed at night after retiring and applied again in the morning before arising. The truss should not be removed permanently

I. A preparation of this type is manufactured under the trade name of Proliferol.

until one is reasonably sure that the hernia is firmly closed, which is usually found to be two to four months from the time of beginning treatment. In the case of large hernias it is necessary to have the patient wear the truss day and night for a longer period. At all times when the truss is being worn it must be removed and replaced with the patient in the supine position.

The patient must be instructed that although he may carry on his normal activities while under treatment, the pad must at all times be in proper position, and if necessary a perineal strap must be worn.

As stated previously the thuja mixture and the tannic acid, alcohol solutions were because of their satisfactory action chosen for our clinical work. Other solutions were not used because they gave no local reaction or too severe a reaction or resulted in a general reaction simulating shock.

Dosage. In the case of thuja solution four to eight drops was the dosage used; and of the tannic acid solution one to four cubic centimeters, depending upon the strength. When the latter solution was employed, a preliminary injection of one cubic centimeter of two per cent. novocaine solution was required. After its injection the needle was left in situ for a few minutes, and the tannic acid solution was then injected. The minimum dose was used in the region of the internal ring and the larger doses along the canal and the external ring. A tuberculin syringe was used for the first solution, and a five-5 c.c. syringe for the latter. A one and one-half to two-inch 22 gauge needle was used, preferably the security anesthesia type to prevent the possible accident of breaking the needle within the abdomen.

Before treating the patient the following general rules must be laid down. One must be certain that the hernia is reduced. The patient must be placed in the supine position and the truss removed and replaced by the surgeon, unassisted by the patient. The skin is prepared by washing with 40% alcohol. The solution is injected slowly and firm pressure applied to the site of the injection for a few minutes thereafter. As the majority of our cases were of the inguinal type the technique for this type of hernia will be given in detail. The internal ring is located slightly above the mid-point on

a line drawn between the anterior superior spine and the symphysis. These three points represent the landmarks which are used as a guide in the treatment of this type of hernia. The direction of the needle should be slightly caudal and not directly vertical to the abdomen. All cases should be injected along the entire course of the canal regardless of the type of hernia. One should first inject the area through which the hernia protrudes, and subsequently the remainder of the canal. In addition, some of the solution must be placed in Hesselbach's triangle, depositing the solution along the conjoined tendon and upon the transversalis fascia. In this case the needle is introduced mesial and posterior to the cord. A distinct "give" sensation is experienced as one goes through the fascia. The syringe must be aspirated before the injection is made to be sure the needle is not in a blood vessel. When injecting the solution about the external ring, it is obviously easier accomplished under the direct guidance of the surgeon's finger which is inserted into the ring by invaginating the scrotum. When injecting the internal ring you are at once aware of the fact that the point of your needle is therein because it can be moved freely in any direction. In most cases the patient will complain of a slight sensation of pain along the cord and in the testicle on the side of injection.

In the case of femoral hernia the solution is used in the minimum dosage and the needle must be placed very carefully in the femoral canal medial to the finger which is placed therein, in order to avoid injuring the femoral vessels and nerve.

In incisional hernia the minimum dosage is also employed, and extreme care must be exerted to deposit the solution directly into the fascia without injury to a viscus. The same obtains in the treatment of umbilical hernia.

The number of injections vary according to the type of case, the average being eight to twelve, although sometimes as few as four or five and as many as twenty-four have been necessary. As few as four are not recommended as the tissues should be over-built to allow for absorption. The average case is injected once or twice weekly depending upon the reaction. The patient should not be discharged until the entire area through which the hernia has presented itself is firm and no impulse can be made out

on coughing. The patient is advised, on being finally discharged, to return for a check-up twice yearly, to avoid constipation and to reapply the truss if seized with any unusual and prolonged coughing spells.

As for complications, we have to date not observed any more serious than a temporary swollen, painful condition of the cord, which was relieved by hot or cold applications, and no patient has been entirely incapacitated for more than one or two days. To date, we have not observed a hydrocele of the cord which required aspiration. They have all subsided within a week or ten days without any treatment other than local applications.

Three reactions have to date occurred where the patients complained of some abdominal pain and have exhibited marked weakness; breaking out in a cold sweat and simulating a mild degree of shock. All symptoms disappeared in an hour without treatment except in one case which was removed to a hospital because of the relatively severe symptoms. He made an uneventful recovery and left the hospital a day later without special treatment. This case I am inclined to believe can be explained on an allergic basis. So far as impotency or sterility is concerned, this has not to date been accurately checked, but we have had no complaints or reports of this in any of our cases.

In summarizing my experience with this method I would say that it covers about 400 cases treated, of which about 200 have been discharged as cured. The recurrent rate is to date 8%. My oldest case from a standpoint of date discharge is three years. There have been eight cases where a closure could not be obtained. The selection of cases was very liberal, excluding only the cases showing definite contraindications. Many of them were surgical recurrences. Contraindications were found in about 10% of the cases examined. The age range was 2 to 90 years.

In conclusion, the author believes that this procedure should be regarded as a surgical one for obvious reasons and if it has merit—as our experience and that of others indicates—it should be placed in the hands of the regular surgical profession where it belongs. To date we can say that this method is as safe or safer than surgery, the incidence of recurrence is less than after surgery and where recurrences do re-

sult they are invariably smaller than the original. In addition, the further procedure necessary for a cure is relatively simple as compared with a new operation such as is required after surgical recurrence.

It might be stated that it is too early to be sure of our percentage of recurrences but unfortunately the same can be said of the surgical recurrences as there is a wide difference of opinion regarding it. We do feel that our figure is quite accurate as we have adopted a careful follow-up system and the patients seem very willing and anxious to return for further treatment, which cannot be said of many of the surgical recurrences.

In addition the economic side of this method of handling hernia must not be lost sight of as the hospital expense and loss of income from absence from duty for several weeks is spared these patients.

The future may show the advisability of more careful selection of cases. We feel the field is open for further investigative work carefully controlled on the basis of our present results.

Finally we must not forget that accidents can and will happen if those attempting this procedure are unfamiliar with it or careless in carrying it out.

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DISCUSSION

Dr. D. R. Cunningham, Evanston, Ill.: I am going to deviate somewhat from the regulation rôle of a discussant to Dr. McMillan's very splendid paper, because I was associated with him in a great deal of the work that he has here presented this afternoon.

Dr. McMillan has mentioned that opportunity was afforded us to make a study of the results of injecting irritants into the tissues of dogs. I would like, at this time, to show a few lantern slides of microphotographs of tissues to demonstrate exactly what does take place after sclerosing irritants are introduced into the inguinal canals of dogs. 1. The first lantern slide shows proliferating fibroblasts and remnants of lymphocytic infiltra-

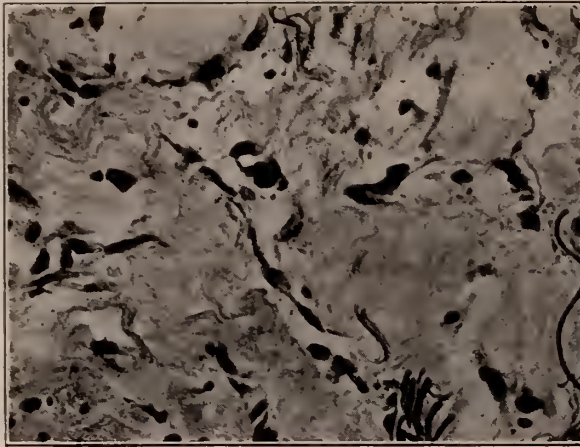


Fig. 1. Showing proliferating fibroblasts and remnants of lymphocytic infiltration one week after injection.

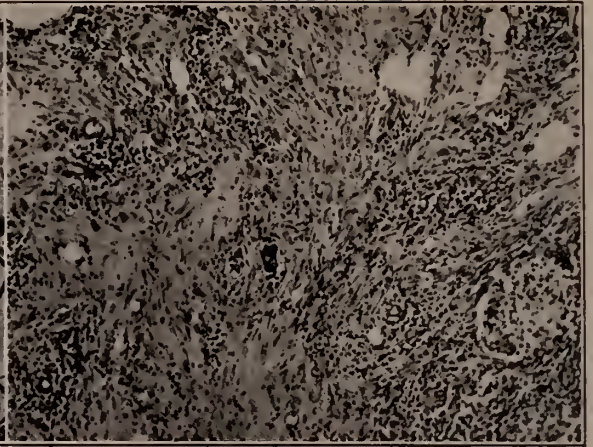


Fig. 2. Showing granulating tissue and maturing fibrous scar two weeks after injection.

tion, in a section of tissue removed from the inguinal canal of a dog, one week after the latter was injected with thuja mixture. 2. The second slide shows granulation tissue and maturing fibrous scar two weeks later from the same area as slide number one. 3. The next slide shows evidence of maturing fibrocytes and remnants of lymphocytic infiltration, and the last slide shows 4. mature connective tissue together with old scarring in a section of tissue eight weeks after the first injection was made. My purpose in showing these slides is merely to demonstrate that the theory of initiating new firm fibrous tissue in the inguinal canal to obliterate a defect is not without foundation. However, I am of the opinion that the biggest disappointment that will befall the operator who uses this method is this; after the entire inguinal canal has been injected in the course of several treatments and no impulse can be found either at the external ring or at any place along the canal, the surgeon will, after the lapse of some weeks, note that a good bit of his newly formed fibrous tissue has been absorbed and that the hernia has recurred. In other words, how can this scar tissue be made permanent? I do not attribute much worth to the claims of surgeons using this method or to the manufacturers of certain solutions for this purpose, that one solution has superior qualities over another in the production of fibrous tissue. When a reaction occurs from whatever solution is used the same final result is lymphocytic infiltration, new fibroblasts, and finally mature connective tissue. Dr. McMillan has mentioned the necessity of a properly fitted truss. It is quite surprising to see a patient come to the office wearing a truss, which is absolutely useless to him. The mere fact that some pressure is exerted at some place along the inguinal canal, very likely explains why some of these patients feel fairly well even when wearing an ill-fitted truss. When the truss is applied properly and has proven to retain the hernia, in any position the patient may assume, all symptoms of discomfort and "heaviness" and "drawing" in the inguinal area are promptly relieved. Dr. McMillan has mentioned that one must be sure that the hernia is re-

duced. Very often small hernias are not detected and the contents could, more often than not, be injected if not recognized as unreduced. I am of the opinion that the cases cited by Dr. Richard Goldhahn must have been complicated by abdominal viscera in the sac. Goldhahn reported three cases coming under his own observation, consisting of two cases of fecal abscess and fistulae and one case of gas bacillus sepsis, and cited two others of much the same complications. I mention this because Dr. McMillan's paper may leave the impression that this technic is quite simple. I think that any needle one and one-half inches long placed in the inguinal canal, first assuming that the needle is there, and then introducing phenol or tannic acid or some other irritant entails some amount of risk. I think the method is safe enough in the hands of men who have access to a large number of cases for treatment and enjoy a good deal of experience.

When the methods become more popular, as it is doing constantly, a great many accidents are bound to happen. Whether or not the method will live as a result of what will inevitably take place by the inexperienced operator in the future, is a matter of speculation. We do know that the number of recurrences in the surgical management of hernia has dampened the enthusiasm of the public, somewhat, in this respect. Surgical intervention today for all types of hernia, is not entirely satisfactory. While the Bassini operation or some modification thereof, may give a fine record of successes in the hands of good surgeons, nevertheless, there still remains that group to which the same operation becomes a repetition. In many cases patients are operated upon on the basis of symptoms only, or because the examiner has found an "impulse" with his finger in the external ring. Many of these patients have a slight bulging suggestive of a direct hernia, where there is no indication for surgery. On the contrary, there are many patients who complain of a certain amount of discomfort in the area of the internal rings, on one or both sides. These patients have distention and gastrointestinal symptoms and are often diagnosed as colitis, etc. In many of these patients, one cannot

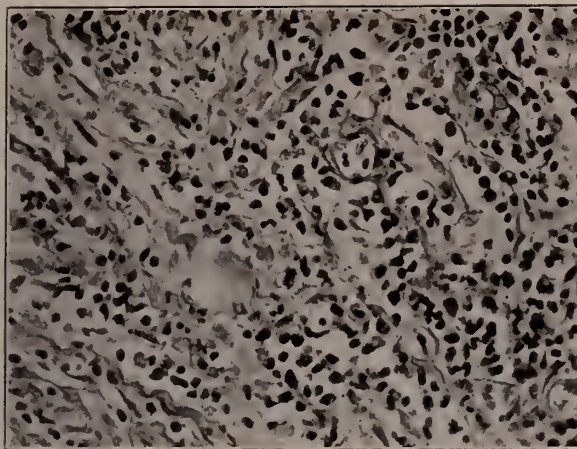


Fig. 3. Showing maturing fibrocytes and remnants of lymphocytic infiltration.

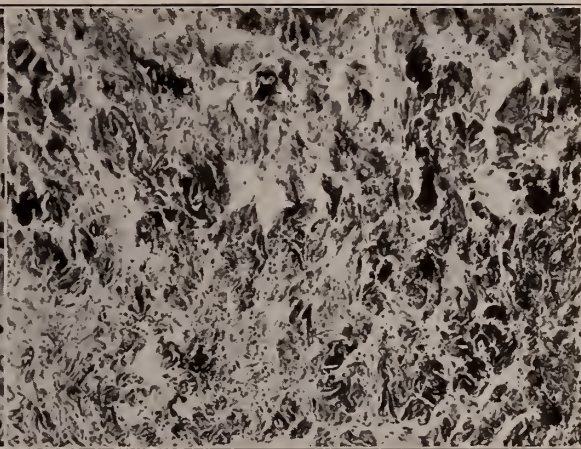


Fig. 4. Showing mature connective tissue together with old scarring eight weeks after first injection.

definitely diagnose an indirect hernia because the neck of the sac is kept fairly well closed by the muscles at that point but as a weakness develops, inflammatory changes occur about the neck of the sac as it tries to progress forward and the resulting symptoms, referred to the peritoneum, occur. I believe in these cases the injection treatment with some support at the ring is ideal treatment. Personally I do not think we are justified in operating on a patient where we cannot definitely convince ourselves that a hernia exists.

The late William B. Coley reporting on 100 cases treated by injection, gave us the sad story of 100% recurrence. However, these figures differ widely from those reported by others who are using the injection method. I think it is quite interesting to think about the work of Dr. McBurney, some forty years ago, who after widely incising the external aponeurosis, and removing the sac high beyond the internal ring, packed the open wound with iodoform gauze to induce scarring of the whole area. It was soon noticed that what was firm connective tissue at one time, gradually became thinner and recurrences resulted. Much the same type of scarring is anticipated with the injection method except, unlike McBurney, the fascial planes are not disturbed. I think it is well that we present the method open-mindedly, in view of the doubts of efficacy of the method, we have entertained in the past. Dr. McMillan has presented a resumé of the treatment in a purely investigative manner, and leaves us to judge for ourselves, as to its usefulness. If the method is not satisfactory, it will not be long before it becomes discarded, and if it has merit it will be kept and used by those who can satisfy themselves with its results.

Dr. George deTarnowsky, Chicago: It is interesting to go back fifty or seventy-five years to the injection treatment of hernia. I feel that as a surgeon Dr. McMillan's paper rather justified our results. When we speak of failures in herniotomy we include not only the oblique, but the direct and the ventral hernia. McMillan's method has very limited application. He mentioned the minor complications, but he forgot to men-

tion direct hernia. Any large hernia is not suitable for injection treatment. The sliding hernia is not suitable. It is quite true that Dr. McMillan and his associates have taken up this study scientifically by experiments on dogs before trying it on the human being. It is true that we have a great number of sclerosing agents, and it is true that scar tissue will thin out. Dr. McMillan obtained his best results in the small, oblique hernias, but those are the hernias in which we get 100% good results with surgery.

He spoke of the economic saving. The patients have to come back for check-up of these hernias repeatedly. When you analyze your entire treatment from an economic viewpoint, I do not think there is much to be gained over the knife of surgery.

I would question its use in femoral hernia. There is not much in femoral hernia except the sac, only in rare cases where it passes above Poupart's ligament and makes the surgeon think he is dealing with a direct hernia.

I think the word of warning that the first discussor brought out is worth repeating. If any of you are going to attempt the injection treatment, try it out very carefully on the cadaver. Get the anatomic points carefully outlined, and then watch for the complications. If this becomes popularized, that is, taken up by the casual operator, I fear we will have as many calamities as we read about fifty or sixty years ago.

Dr. C. E. Ward, Cleveland, Ohio: It has been a great pleasure to know Dr. McMillan and to have had the opportunity of attending his clinic at Northwestern University and I have been very much impressed with the results he has had with the injection treatment of hernia.

During the past thirty-six years I have operated on several hundred hernias and my results have been about the run of the mine, the average number of cures and recurrences. I did not accept the injection treatment of hernia overnight but made a thorough study of it over a period of several years before adopting this method of treatment. I believe it offers a tremendous

field for any man who will study his anatomy minutely. Personally, I went back to my cadavar work and injected methylene blue into the inguinal canal and observed where it flowed. This gave me definite knowledge of the channel the fluid follows when injected into a patient.

No one should attempt to inject a hernia unless he is definitely sure that it is completely reduced and can be held reduced by a truss. After you are satisfied on this point the most important step then is to be able to differentiate the types of hernia. We all should be able to do this but, unfortunately, we all cannot. Mistaken diagnosis as to the type of hernia has caused much of the failure and criticism of this method of treatment.

It is most essential that you know how to reduce a hernia and to know when a truss is well fitted. Dr. McMillan has mentioned the importance of the truss and I thoroughly agree that while it is not within the province of our profession to fit the truss, we should know when it is well fitted and should have one truss man upon whom we can rely. When I send a patient to a truss maker, I send the diagnosis and tell him how the truss is to be fitted. If you will watch your truss, you will eliminate a great deal of trouble.

Concerning contraindications, I think Dr. McMillan has been overly cautious. I believe that none of us would attempt to operate on a hernia on a man seventy-six years of age with a large simple hernia, complicated with either nephritis or diabetes or an enlarged prostate and one in whom the hernia rolls out every time he attempts to void but I can take that same patient into my office and, if I can reduce his hernia and hold it reduced with a truss, I feel absolutely confident that I can give him more relief by injections than I would by surgical procedure, and this without danger to his life. When we meet with an elderly gentleman with a hernia which a truss will not hold, we can put him to bed for four or five days, give him three or four injections which will create a sufficient amount of exudate and fibroblasts so that his truss will hold the hernia reduced and then continue treatments as an ambulant case.

I was surprised to hear Dr. McMillan say that he had had one gentleman 90 years old. My eldest patient is 76 years of age and my youngest one year. I find that about 95% of the cases which I have seen are male patients and 5% females. They are subdivided into four groups, direct, indirect, femoral and post-operative hernias. Of 100 hernias, you will find 10 recurrences, post-operative patients coming for relief who have been operated on as many as three times. Many have had fascial transplants.

Twenty per cent. of the hernias are direct, that is my average. Some statistics show it to be lower. Bilaterals will run about ten per cent. Right hernias occur twice as often as left hernias.

The Industrial Commission of Ohio at the present time recognizes my work and allows me to treat patients by the injection method. I do not know whether or not your Illinois Commission recognizes it.

As to the preparation used. I feel that we will, in all probability, have a better preparation than either

tannic acid or thuja mixture. I firmly believe that no one mixture will cure all types of hernias.

I treat my cases individually and sometimes use a combination of thuja and tannic acid. My practice is a referred one and has to be carefully handled, and to minimize the discomfort, I have worked out what I call a "Triple A" anesthesia. I first apply to the skin where I am to make my injection a few drops of a solution of a 10% benzocain dissolved in one dram of alcohol to which is added one dram of a 5% carbolyzed oil and one dram of castor oil. The castor oil is used to hold the solution in the spot where you are to make your injection.

This solution acts as a local anesthetic to the skin and undeniably lessens the pain when the needle is inserted. The second anesthetic is a solution of novocain and diothane. The diothane is similar to novocain but more prolonged in action, lasting, as a rule, for several days. I use 2 cc novocain with $\frac{1}{2}$ cc diothane. I use first a very fine needle and make a small wheel into the subcutaneous tissue, then use a $1\frac{1}{2}$ inch, 22 gauge needle and inject the remainder of the novocain mixture into the canal, leaving the needle in situ. About five minutes later I slowly inject the sclerosing fluid through this same needle into the inguinal canal. When you feel the needle pierce through the fascia you will know you are in the canal. For my convenience and to avoid any confusion between the two solutions, I use a blue syringe for the novocain and a white one for the sclerosing fluid. I find it essential to keep a record of each injection on a card which I have had printed for this purpose.

Under complications, Dr. McMillan has said that he has never had a hydrocele of the cord following injections. I have had three following direct hernias. From a surgical standpoint direct hernias are difficult to operate on and the results are not as satisfactory as the other types and more frequently recur. Direct hernias are also more difficult to treat by the injection method and recurrences are more frequent.

In injecting the fluid in to Hesselbach's triangle, one may get a few drops of the fluid into the upper or lower angle of the cord and in this event a hydrocele might result and if it does, aspiration may be necessary. One patient showed an allergy to tannic acid. He had bilateral hernia and I treated both sides at the same time and I feel sure that I gave him too large a dosage. The ill effects passed away in about three hours, however. I have also seen swelling of the testicles as the result of a treatment. A suspensory was applied and they were made comfortable and the swelling quickly subsided.

One point I want to bring out especially; I have not seen an infection or a necrosis. If you know where your needle is, certainly this treatment is just as safe as any surgical procedure that has generally been adopted.

Dr. John A. Wolfer, Chicago: I want to take this opportunity, as this work comes from my school, to express the policy in our division. Three years ago at a meeting of the American Surgical Association in Toronto, Dr. Wangenstein, Professor of Surgery at

the University of Minnesota, told me that if he had a hernia he would have it injected and not operated upon. Knowing him as I do, I thought there must be something to it. It is the duty of a University to find out whether a suggested procedure has real merit. There is no other way we can teach or advocate for or against a procedure unless it is carefully investigated, therefore, Dr. McMillan started to work out this plan. They understood the situation perfectly well and went into this with an open mind. They are going to study their cases carefully. The basic principles have been studied in experimental animals. I want to express this as the policy of our Department of Surgery. The reason for the frequent visits was for the purpose of observation and does not mean that the patient who has received the injection method of treatment need to return so frequently.

Dr. W. M. McMillan, Chicago (closing): I have nothing further to say except to clear up one point. We did not eliminate direct hernias in our series. We do not consider them contraindications, though I know they are more difficult to treat and cure. Our recurrence rate includes direct hernia.

HISTOLOGIC CHANGES IN THE TISSUES OF MAN AND ANIMALS FOLLOWING THE INJECTION OF IRRITATING SOLUTIONS INTENDED FOR THE CURE OF HERNIA

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MINNEAPOLIS, MINN.

Recent clinical revival of the injection treatment of hernia has led to a desire for sound and careful reappraisal of a method which was a common procedure in the decades preceding and following the Civil War. Perhaps largely because of abuse and exploitation by irregular practitioners then and since and the dramatic progress in the surgical treatment of hernia about 1880, the method was all but forgotten or strongly condemned by the profession. There has been only the barest mention of the injection treatment in the literature in the past 50 years.

Few tissue studies dealing with the effects of irritating solutions, intended for the cure of hernia, have been made. No such studies on the human have been recorded in the past half century. In 1883 Warren reported a brief study of tissue reactions following injection of a solution containing quercus alba. He described the formation of "plasto-lymph" in the first few days.

From the Hernia Clinic, Minneapolis General Hospital, and the Department of Surgery, of the University of Minnesota.

Later this became organized into adherent fibrous tissue. He observed that the fibrous tissue did not acquire much strength until 10 or 12 days had elapsed and therefore he confined his patients to bed for such a period, after which he allowed them to be up and about with a truss. One injection was relied upon to cure the hernia usually. Occasionally a second or third injection was given. Warren seemed to realize that the irritating solution actually caused the development of an inflammatory reaction which was largely proliferative. Apparently Warren made no histologic sections. He has stated that "the essential element of success in the cure of hernia, is the closure of the hernial rings and the inguinal canal." The tissues to be organized into fibrous tissues were "the tendon and fascia which form the internal and external abdominal rings, and the inguinal canal."

Heaton examined the body of a man who had been treated for hernia by injection five years before death. The structures appeared normal. The fibrous tissue at the site of injection seemed to be as tough and resistant as that on the normal side. He suggested that the fibrous tissue, formed by the irritant, contracted around the internal ring and sac and thereby cured the hernia.

More recently Bratrud has shown that fibrous tissue develops after the injection of irritating solutions into the rectus muscle of dogs.

TISSUE REACTION TO IRRITATING SUBSTANCES

The tissue reactions induced by injection of irritants follow the well known laws of inflammation and pass through three separate phases. Bell has designated such phases as alterative, exudative and the reaction of connective tissue cells. Any one phase may overshadow the other quantitatively but each one is present in some degree in all except very mild inflammations. Certain substances may cause one phase of the process to predominate over the others. Virulent bacteria may stimulate the alterative or exudative phase predominantly whereas organic substances such as carbon or carmine particles induce mainly the connective tissue phase. Polyblasts soon predominate in the cellular exudate after particulate organic matter, such as carbon, is injected. Polyblasts may become fibroblasts and may develop connective tissue fibers.

Examples of the permanence and contractility

of newly formed fibrous tissue are found following chronic mastitis or esophagitis, in which the stenosis may be extreme; peptic ulcer with hour glass constriction; cicatrization of intestinal ulcers, and the strong inelastic scar occurring in the skin following second and third degree burns.

*Method of Investigation.** Opportunity came to us to observe the effects of irritating solutions in the tissues of man at varying intervals following injection. Such solutions were injected under the fascia of the external oblique muscle in the inguinal region. Patients were selected who, after one or two injections, had decided that they preferred to be operated upon. In some instances the operation was delayed in order to vary the interval between the injection and the biopsy. Specimens were obtained from 25 patients.

The dissection of the fascial planes was impeded somewhat where the adhesions were extensive.

Histologic Reactions. Human tissue reactions were similar to those which were observed subsequently in the dog and hence only the changes in the human will be described in detail. Tissue changes in the dog will be dealt with in less detail in a subsequent paragraph.

Fifteen hours after the injection of a solution containing phenol, alcohol and thuja* (Fig. 1) the tissues were edematous. An odor of Thuja could be detected. Some pallor but no definite necrosis was visible. Microscopic examination revealed that the tissues were infiltrated with cells about equally divided in number between polymorphonuclears and lymphocytes. The lympho-

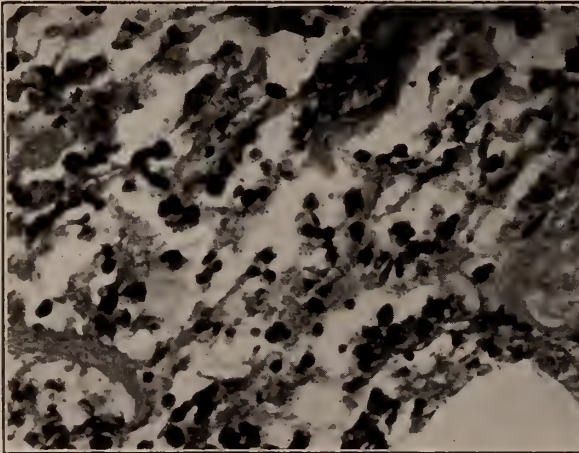


Fig. 1. Photomicrograph (x410) of human tissue 15 hours after injection of thuja solution. An exudative reaction with polymorphonuclear cells, round cells and fixed connective tissue cells. Compare with Figure 7 in which fibroblasts are more abundant and polymorphonuclear cells are less evident.

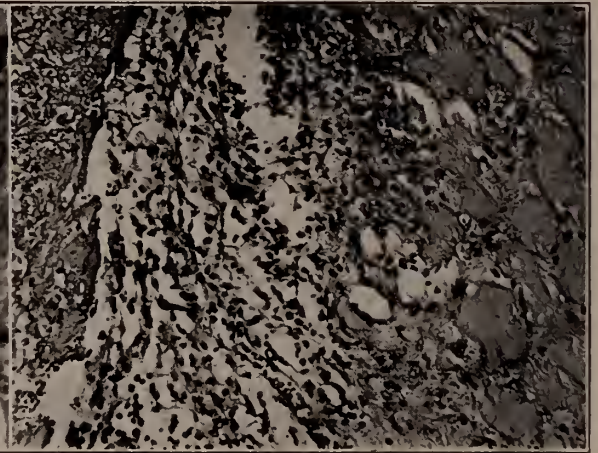


Fig. 2. Photomicrograph (x200) of human tissue. Five days following injection of thuja solution. Muscle fibers show evidence of necrosis, newly formed blood vessels, round cells and a few fibroblasts are seen. Polymorphonuclear cells are present.

Where two separate injections had been made at different times tissue was removed from each area. Spinal anesthesia was used in this series. The standard hernioplasty technic was employed. The gross appearance of the tissues at the site of the injection was observed. The cord was dissected free from the inguinal canal and the tissues were examined for evidence of inflammation.

Histologic changes which occurred as the tissue reaction progressed will be described in the following paragraphs.

Very few technical difficulties were encountered because of adhesions formed by the injection.

cytic infiltration was more abundant adjacent to the vessels. Some areas of hemorrhage could be seen. There appeared to be a very definite proliferation of the fixed connective tissue cells between some of the muscle bundles. The muscle bundles adjacent to the areas of greatest inflammation showed some loss of striations, indicating early evidence of cellular necrosis.

Five days after the injection of the Thuja solution (Fig. 2) many of the polymorphonuclear leucocytes had disappeared. The lymphocytes remained. Polyblasts and fibroblasts could be seen.

*Phenol 50, alcohol 25, oil of Thuja 25. Hereinafter referred to as Thuja solution.

An occasional eosinophile cell could be identified.

A few plasma cells and mitotic figures also could be demonstrated. Here and there a newly formed blood vessel could be seen among the fibroblasts. There was an occasional large multinucleated cell indicating regeneration of muscle fibers. Occasionally such a multinucleated cell appeared as a giant cell. Some of the areas seemed to have advanced further than others in development of fibroblasts but polyblasts and very young fibroblasts dominated the cellular picture.

On the 7th day (Fig. 3) fibroblasts predominated the microscopic structure. Such cells were more abundant and appeared slightly more mature than the fibroblasts which were observed after five days. Collagenous fibers were more

In one slide eleven days after injection the reaction did not appear to have progressed as far as on the eighth day. A few lymphocytes and polyblasts could be found here and there. An occasional area of necrotic cellular debris infiltrated with polymorphonuclear cells could be seen. A few large scattered plasma cells were identified. Polyblasts and collagenous fibers were less abundant. A few polymorphonuclear cells and lymphocytes were present.

On the fourteenth day (Fig. 4) the fibrous tissue was found to lie in dense bundles. The fibroblasts seemed to have matured. Their nuclei were smaller and the fibers were more abundant. In other areas fibroblast nuclei predominated with only a few fibers between them. There were also areas of lymphocytes. No polymorphonu-

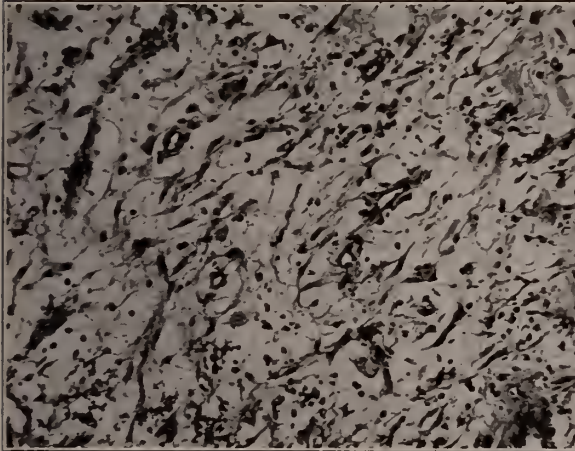


Fig. 3. Photomicrograph (x200) of human tissue 7 days after injection of 4 minims of thuja solution. Young fibroblasts, newly formed blood vessels and some round cells are outstanding features. An occasional plasma cell, eosinophile and polymorphonuclear cell can be seen.

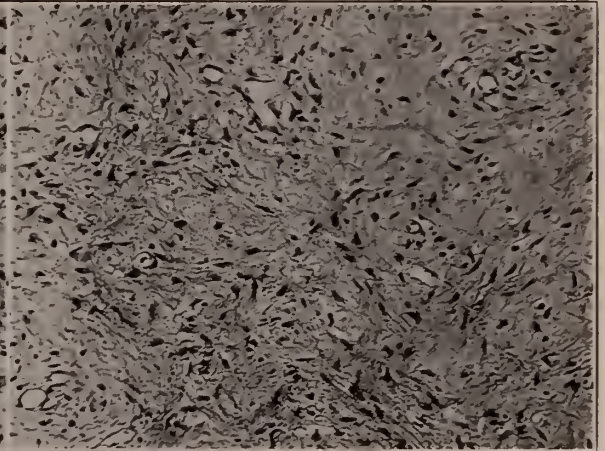


Fig. 4. Photomicrograph (x200) of human tissue, fourteen days after injection of 8 minims of thuja solution. Young fibrous tissue and intercellular fibers are quite evident. An occasional round cell still is present. No polymorphonuclears are found.

abundant. Areas of regenerating nuclei could be seen. Polymorphonuclear cells were definitely decreased in number. Plasma cells and eosinophiles could be seen occasionally. An area of necrotic tissue was visible in a few places.

Eight days following injection the fibroblasts were beginning to appear more mature and likewise more abundant. Intracellular fibers were beginning to make their appearance. Newly formed blood vessels were less in evidence. An occasional polyblast could be seen. The histologic picture was quite similar to that which was observed on the seventh day except that the cellular reaction was more abundant. A few areas of round cells were found.

clear cells could be found. The tissues appeared more dense than in earlier sections. An occasional eosinophile cell could be seen. Small areas of necrotic tissue were visible.

Eighteen days after injection most of the tissue appeared as adult fibrous tissues. A few areas of lymphocytes were seen but were much less in evidence than in earlier sections. In some areas the fibrous tissue bundles were very compact whereas in other areas they were more widely separated.

At twenty-two days (Fig. 5) the structure was similar to that on the eighteenth day.

After forty-two days (Fig. 6) the fibrous tissue appeared as adult fibrous tissue. The fibro-

blastic nuclei were less abundant and fibers were found in large bundles. No leucocytic infiltration could be found. The fibers appeared to have advanced further in some areas than in others.

No sections were obtained beyond forty-two days.

It appeared from these histologic sections that a solution as caustic as phenol, alcohol and thuja, although it produced fibrosis, also produced an exudative reaction which seemed unnecessary and undesirable. From four to eight minims were used. The section after eight minims showed more areas of necrosis than those sections in which only four minims had been used.

Some patients developed mild systemic reactions somewhat similar to an acute rhinitis or a general reaction with muscle aching and sore-

produces a predominance of the proliferative phase of the inflammation with a minimum of the exudative phase, thereby stimulating the production of fibroblasts so that the defect can be filled with scar tissue.

EXPERIMENTAL INVESTIGATIONS

All solutions which were tried clinically were found effective in producing the desired end result. Certain ones seemed, however, not to meet all of the requirements because of their side effects. Other solutions were then injected into the rectus muscle of the dog in an effort to determine the relative amounts of exudative and proliferative reactions.

Solutions containing tannic acid and alcohol as the principal ingredients were found to pro-

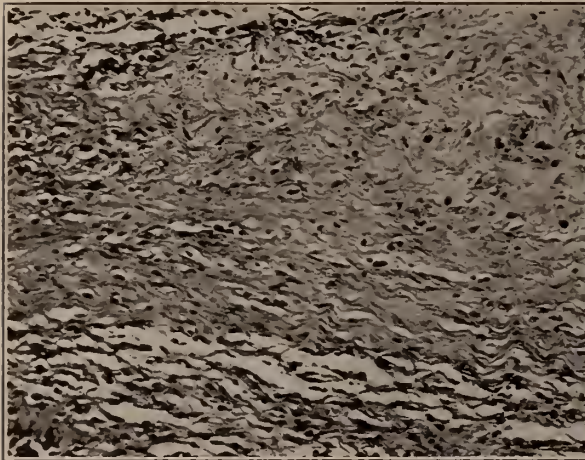


Fig. 5. Photomicrograph (x200) of human tissue 22 days after injection of 4 minims of thuja solution. The fibrous tissue is well developed. Wavy fibers are seen in abundance.



Fig. 6. Photomicrograph (x200) of human tissue 42 days after injection of 4 minims of thuja solution. Fibrous tissue is abundant. To the right can be seen a less advanced stage proliferation.

ness. These systemic reactions occurred after the injection of the mixtures which contain tannic acid. Such reactions continued for 24 or 36 hours. In addition many patients complained of pain in the inguinal region on the second or third day following the injection. This was not an unbearable feature but rather undesirable.

We decided therefore to investigate the action of other solutions in an endeavor to find an ideal solution. We have designated an ideal solution as one which 1. produces no pain when injected, 2. is non-injurious to the tissues, 3. produces no systemic reaction from its absorption, 4. is non-toxic if inadvertently injected intravenously, 5. produces no serious peritoneal reactions if likewise injected into the peritoneal cavity and 6.

duce a greater amount of the exudative reaction than sodium psylliate,* a mild soap, solution. The proliferative reaction produced by sodium psylliate was the outstanding tissue change, the exudative reaction minimal.

Twenty-four hours after the injection of 5 c.c. of sodium psylliate into the rectus muscle of the dog there was no evidence of tissue necrosis and no pallor. (Fig. 7.) Microscopic sections revealed an infiltration of round cells and a few polymorphonuclear cells. There was definite proliferation of the fixed connective tissue cells and young fibroblasts. The muscle cells had not lost their striations.

*Synsol-Searle.

Seven days after the injection of sodium psylliate the section revealed numerous young fibroblasts and a moderate amount of fibers. There were no polymorphonuclear cells and only a few round cells remained. An occasional plasma cell and eosinophile cell could be seen.

Subsequent sections revealed a progression of this proliferative reaction so that at the end of twenty-four days the fibrous tissue appeared strong and fully developed. (Figs. 8-11.)

Sections from the human, following the injection of sodium psylliate, have been obtained on the third, fifth and twenty-first day and show a similar reaction to that which was observed in the dog.

The solutions containing tannic acid and about 80% alcohol, when injected intravenously in 5

exudate. A similar injection of the sodium psylliate likewise appeared to produce pain which lasted for only a few minutes. Twenty-four hours later the peritoneal cavity was opened but no evidence of inflammation could be detected.

CASE REPORTS

The gross appearance of the tissues in one patient who had received treatments without having been completely cured is reported in the following case history.

Mr. Wm. B. No. 19453A, aged 46 years, had a large bilateral hernia. It had been present for 35 years on the right side and 3 years on the left side. A truss had not maintained reduction satisfactorily. The external rings were estimated to measure 3 cm. in diameter. A new Hood truss was applied and found to be adequate. Twenty-nine treatments were given. After eight months had elapsed the hernia could not be forced into the scrotum but protruded from the external ring about three to four centimeters. The external ring had been

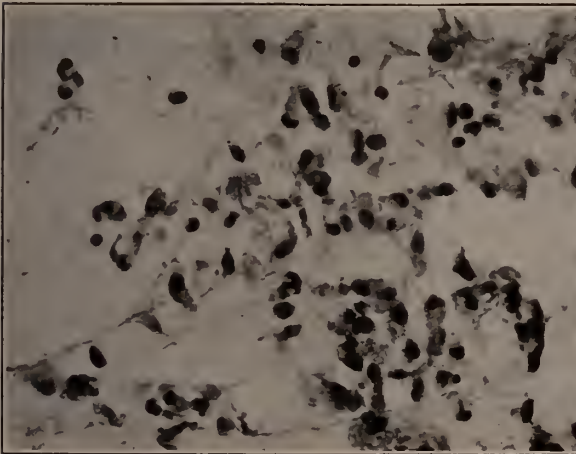


Fig. 7. Photomicrograph (x410) of tissue from a dog 24 hours following the injection of 5 cubic centimeters of sodium psylliate into the rectus muscle. Reaction of connective tissue cells—Fibroblasts, plasma cells and round cells predominate. An occasional polymorphonuclear cell can be seen.

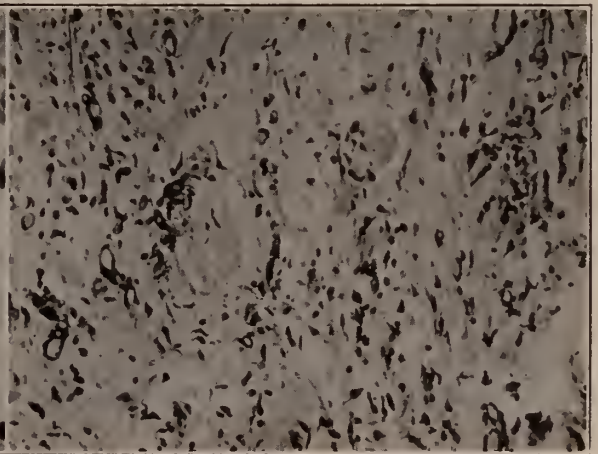


Fig. 8. Photomicrograph (x200) of tissue in dog seven days following injection of 5 cubic centimeters of sodium psylliate into the rectus muscle. Fibroblasts with collagenous fibers and newly formed blood vessels are seen. No polymorphonuclear cells could be found. Compare with Fig. 3 in which polymorphonuclear cells were found.

c.c. doses and thuja solution in six minim doses caused the dog to appear sick and stagger about on the floor for a few minutes. The recovery however was complete. The intravenous injection of sodium psylliate* solution in 5 and 8 c.c. doses produced no demonstrable change in the dog's reaction.

Intraperitoneal injection of the solutions containing tannic acid and alcohol produced, in the dog, what appeared to be pain. He recovered from this within 20 minutes. Twenty-four hours later the peritoneal cavity was opened and it was found that the vessels were congested. There was a slight amount of free fluid but no fibrinous

reduced to approximately 2 cm. in diameter but we seemed incapable of promoting a complete cure. It was therefore decided that he should be operated upon. A Gallic fascial transplant operation was performed on both sides.

The operative findings revealed that the fascia of the external oblique muscle was thicker than normal. Dense scar tissue was found on its under surface adherent to the cord and surrounding tissues. This fascia could not be dissected as easily from the cord and surrounding structures as is usually the case in an uncomplicated hernia. The usual loose areolar tissue in the inguinal canal and surrounding the cord was replaced by dense scar tissue. The appearance was much similar to that which is observed in a second operation for hernia. The scar tissue overlying the internal ring was dense but the posterior surface of the internal ring was patulous.

This apparently accounted for the failure to close the hernia, for in this case the posterior surface had not been injected and was free to give way to the protrusion of the abdominal contents. This taught us the importance of closing the internal ring by circumferential injections so that when the scar tissue does contract it will do so from all sides much in the manner of an annular stricture of the esophagus or rectum, as has been described by Rice and Larson in a paper dealing with the technique.

Induration of the Cord. Induration of the cord is a condition which has been observed on a number of occasions following the injection of the more irritating solutions. This condition manifests itself clinically by the presence of a hard sausage-like swelling extending from the in-

this was done three weeks after the last injection. Exploration showed recently formed fibrous tissue in the inguinal canal. The cord was adherent to the overlying fascia of the external oblique. The usual loose areolar tissue in the inguinal canal was replaced by scar tissue. It could not be dissected freely. Sharp dissection was necessary to separate the fascial planes and the spermatic cord. The cord and testicle were removed and the hernial defect was repaired. Examination of the excised tissues showed the cord to be enlarged two and one half times normal diameter. There was considerable edema within the cord. The testicle appeared normal. The walls of the hernial sac were found plastered together, loosely, by soft adhesions. Microscopic section showed areas of newly formed fibrous tissue within the lumen of the sac. (Fig. 12.) The veins were distended with blood but no thrombosis was seen. The vas appeared to be patent in all sections examined. There was no evidence of inflammation around the vas. Sections of the epididymis and testicle revealed no evidence of abnormality.

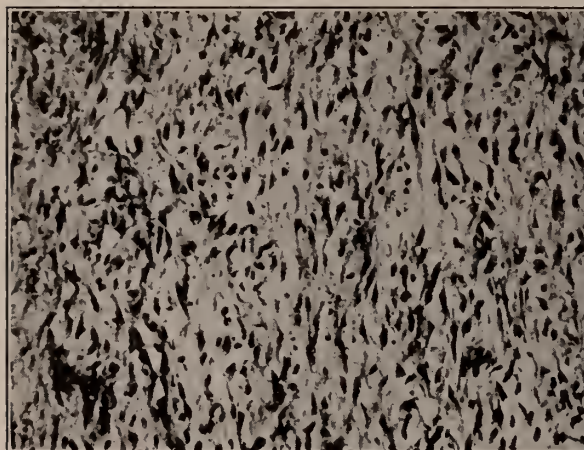


Fig. 9. Photomicrograph (x200) of tissue from a dog 11 days after the injection of 5 cubic centimeters of sodium psylliate into the rectus muscle. Fibroblasts seen in abundance. A few round cells but no polymorphonuclear cells could be found.

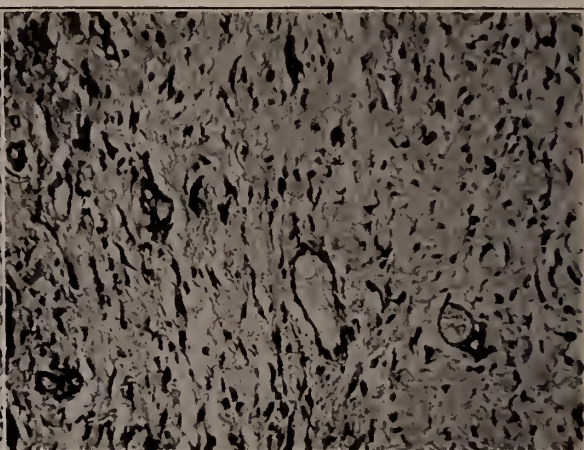


Fig. 10. Photomicrograph (x200) of tissue from a dog 14 days following the injection of 5 cubic centimeters of sodium psylliate into the rectus muscle. Fibrous tissue more mature than in previous section.

ternal abdominal ring to the point in the spermatic cord at which the hernial sac ended. In several patients a clear yellowish exudate was aspirated from the indurated mass. Spontaneous absorption or organization of the exudate took place in other patients. This condition has not been observed as frequently following the use of sodium psylliate as was observed from the use of the tannic acid-alcohol solutions. The following case is an instance of spontaneous organization of this exudate.

Mr. O. S. No. 10869, aged 63 years, had a large right indirect inguinal hernia. He had received six injections at weekly intervals. After the sixth injection he developed an induration of the cord which was subsiding gradually. He decided to be operated upon and

The findings in this case seem to indicate that the injection of the irritating solution close to or into the hernial sac will cause an obliteration of the sac by fibrous adhesions and that induration of the cord, as observed clinically, is a manifestation of this type of reaction.

It has not been definitely determined whether or not this fibrous closure of the sac occurs in every case in which the injection treatment has caused a cure. In one instance in which the patient had been pronounced cured by this method a subsequent examination of the region of the internal ring through a McBurney incision failed to reveal any evidence of a hernial sac projecting into the inguinal canal. This case

had not developed an induration of the cord but the sac appeared, nevertheless, to have been obliterated leaving only a small pin point opening at the internal ring into which a probe could be inserted for a distance of about one centimeter. Other opportunities to observe more cases under similar circumstances may eventually give us valuable information in this regard.

In the past three years approximately 800 patients with hernia have been cared for at the Minneapolis General Hospital. The results have been gratifying and the complications minimal. These details are discussed by Rice and Larson in a paper dealing with the end results following the injection treatment of hernia.

Summary. Gross and microscopic findings in the tissues of man following the injection of an

alysis of their exudative and proliferative reaction suggests that a mild soap solution* produced less of the undesirable exudate reaction and no less of the proliferative reaction.

The operative and microscopic findings in a case complicated by so-called induration of the cord are reported and seem to indicate that this sequella, though undesirable, is of no serious concern.

The inability to cure a patient has been explained on the basis that the fibrous tissue was not produced circumferentially around the internal ring.

CONCLUSIONS

Fibrous tissue is produced, in the human, following the injection of irritating solutions intended for the cure of hernia. Such changes are

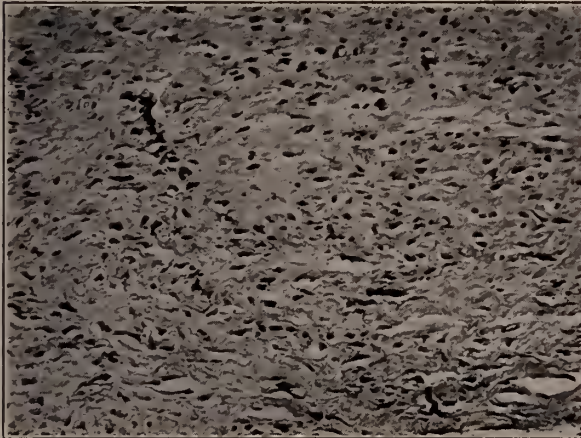


Fig. 11. Photomicrograph (x200) of tissue from a dog 23 days after the injection of 5 cubic centimeters of sodium psylliate into the rectus muscle. Fibrous tissue beginning to assume wavy characteristics.



Fig. 12. Photomicrograph (x75) of section through the hernial sac in a patient who had developed an induration of the cord following injection of thuja solution. Fibrous tissue is shown forming between the 2 surfaces of the sac. This indicates the mechanism of closure of the sac if the hernial sac is inadvertently injected. Undesirable but not necessarily harmful.

irritating solution intended for the cure of hernia are described. Sections were taken from twenty-five patients. At the end of 15 hours the reaction was mostly exudative. Polymorphonuclear and round cells were found in the exudate. Proliferations of the fixed connective tissue cells appeared on the first day. By the fifth day most of the polymorphonuclear cells had disappeared. Fibroblasts appeared on the third day. Fibrous tissue was found in dense bundles after fourteen days. At the end of the forty-second day fibrous tissue was very dense.

The injection of various solutions into the rectus muscle of the dog and a comparative an-

characteristic of an inflammatory reaction in which the production of the connective tissue predominates. Solutions which produce less of the exudative reaction seem scientifically more rational. Clinical trial has proven the method to be effective in carefully selected cases and the histologic investigations, as reported in this paper, seem to establish a scientific rationale for the method.

78 South 9th Street.

*Sodium psylliate:—Synlasol-Searle.

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ACUTE CORONARY OCCLUSION

Points on Diagnosis and Treatment

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EVANSTON, ILL.

The frequency of sudden deaths is constantly focusing our attention on coronary heart disease. As many as four such sudden deaths were autopsied by Timothy Leary, the Medical Examiner of Boston, in a single day¹. In some cases death may be the first symptom; in others, prolonged anginal pain with substernal oppression, dyspnea, epigastric distress, (often with nausea and vomiting), frequently a weak, rapid pulse, feeble heart tones, gallop-rhythm, irregularity in the pulse or heart tones, most frequently due to extrasystoles and occasionally to ventricular tachycardia and the other arrhythmias, signs of shock, cyanosis, pallor, pulmonary edema, Cheyne-Stokes respiration, a fall in blood-pressure, particularly when the blood-pressure has been previously high; after a day or two, fever, leukocytosis, pericardial friction, transient glycosuria, embolism in the brain, spleen, kidneys, lung, or a typical electrocardiogram, complete the picture.

Often the physical findings are few; indeed, there may be no characteristic objective signs at the time of the examination. A careful, detailed history is, therefore, of the utmost importance². In evaluating the history I have found an arbitrary division of patients, according to their pre-

dominating symptoms, an aid in recognizing the true nature of their illness.

1. There is the common type, with the anginal syndrome of severe substernal pain, a "constricting" or "crushing" sensation, frequently radiating to the shoulders, arms, jaw, back, neck or abdomen, lasting for an hour or more, relieved only by morphine, and then often only to a partial extent.

2. In others epigastric distress, with nausea and vomiting, may be the predominating feature, especially in the middle aged, these folks often volunteering that they have eaten something that has poisoned them, and "surely nothing is at fault with the heart."

3. Again, there may be a sudden onset of dyspnea, occurring while sitting or reclining, or coming on at night in paroxysms, the so-called attacks of cardiac asthma. This symptom occurs more frequently in elderly individuals, in contrast to the younger sufferers who are more often afflicted with anginal pain.

4. There remains a not inconsiderable group who do not fit into the preceding arbitrary divisions and have no characteristic complaint, being only vaguely conscious of not feeling quite well. They may have weakness, faintness and sometimes syncope, yet all the usual findings we have learned to associate with coronary occlusion are absent. It is here that diagnosis is often too long delayed, and death too frequently results, perhaps from neglect of the all-essential prolonged bed rest and nursing care so necessary to the satisfactory healing of a myocardial infarct. If leading questions are asked, these patients will sometimes admit slight dyspnea, and some may have felt discomfort in the chest, although there may be no sensation of actual "pain." A brief summary of the case histories of three such individuals will serve to emphasize that group of so-called "silent" coronary accidents:

Case 1. A male patient fifty-two years of age complained of several attacks of weakness, the first coming on one Sunday in the early part of June, 1935. Following a hearty dinner he became faint, broke out into a perspiration, and with difficulty walked into his bedroom and lay down on the bed. Within an hour he recovered, and was able to attend business the following day, remaining free of symptoms for two weeks, when there was another attack of weakness, this also coming on after eating. On arising from the table he fell over, losing consciousness momentarily. These

¹Read before Section on Medicine of the Illinois State Medical Society, Springfield, May 19, 1936.

experiences were not associated with heart disease, the complaint being extreme weakness, which continued. The attacks became more frequent, finally forcing him to decrease his hours of work.

Such was the history volunteered by the patient when seen on September 5, 1935, three months after the first attack. When questioned, dyspnea on walking up stairs was admitted, although he maintained that he climbed "Elevated" station steps with no more shortness of breath than his friends experienced. Continued questioning revealed that he had experienced a vague sensation in his chest, hardly classified as discomfort, and usually noted upon going out-of-doors into colder air.

The heart tones were weak, rapid and irregular, with the characteristic irregularity of extrasystoles. Blood-pressure was 105/70. An electrocardiogram showed evidence of a recent myocardial infarction, of the "T₁" type, and an old one of the "T₃" type. The cause of his illness was explained to him, and he willingly remained in bed, with nursing care. Yet on the tenth day he succumbed suddenly upon sitting up in bed.

Case 2. A sixty-eight year old male patient on the eighth post-operative day, convalescing from a simple cystotomy, following the first-stage operation for a prostatectomy, suddenly became faint while turning over in bed during his bath; his pulse was weak, extremely rapid and at times imperceptible, his face ashen, and lips cyanotic, and within a few minutes he lost consciousness. Caffeine sodium benzoate was administered, and within a few minutes he regained consciousness. He recovered to about his former state of convalescence and had no specific complaint, although he was alarmed over the fainting attack and did not feel quite so strong.

The electrocardiogram showed a typical curve for myocardial infarction, of the "T₃" type, confirmed by subsequent serial records over a period of two months, during which time he was kept absolutely in bed, with good nursing care. During the early part of his rest oxygen and intravenous glucose were administered. After two months he was allowed to be up at increasingly longer intervals. At the end of three months he had made an uneventful recovery.

Case 3. A well-preserved active man of seventy-nine years, while attending church services suddenly felt weak, lost consciousness and sank to the floor. After a few minutes he was able to get up and go home in his car, with the help of friends. His only complaints were slight dyspnea and a feeling of weakness. An electrocardiogram showed evidence of an acute coronary occlusion, with myocardial infarction of the "T₁" type.

In addition to a careful history and physical examination, valuable information may be derived from the electrocardiogram; in fact, it may be essential not only to confirm but to make a diagnosis. In evaluating the electrocardiographic evidence the serial studies of at least three four-lead electrocardiograms, taken a week apart, should be considered. Single electrocar-

diograms, especially when the findings are doubtful or negative, are inadequate and often misleading, as I have previously shown.³

In reviewing the serial records we first note the early injury currents producing deviations of the R-T intervals, followed by inversion of the T-waves. The electrocardiograms usually follow one of two groups, namely, the "T₁" and the "T₃" types^{4, 5}. The "T₁" pattern consists of an early elevation of the R-T interval in Lead I., and frequently also in Lead II., with often a reciprocal depression of the R-T interval in Lead III. and absence of the initial downward deflection in Lead IV⁶. Usually within a week the current of injury subsides and the R-T interval deviations approach or come to rest at the isoelectric line, the T-waves being deflected in the opposite direction to that of the corresponding R-T interval; that is, T₁, and frequently T₂, becomes inverted, whereas T₃ is upright. In the fourth lead while the R-T interval tends to approach the isoelectric line T₄ may or may not become diphasic or upright.

In the "T₃" configuration immediately after infarction the injury current gives rise to an elevation of the R-T interval in Leads II. and III., with often a reciprocal depression of the R-T interval in Lead I. The fourth lead is not characteristic and usually does not change, although occasionally there may be a slightly increased R-T interval, with later an upright T-wave. Here, as in the "T₁" type, the injury current is not often active for more than a week or ten days. Subsequently the R-T intervals approach the isoelectric level, and the T-waves become deflected in the opposite direction to that of the previous R-T interval deflections; that is, the T-waves in Lead II. and III. become inverted, whereas the T-wave in Lead I. tends to be upright. Also, a large Q-wave is present in Lead III. and usually in Lead II⁷.

Simultaneously with and in addition to these characteristic patterns of the two types, by reviewing the serial electrocardiograms we often note in the constantly changing picture other phenomena found in both types, such as: 1. A lowering of the voltage of the QRS complexes^{8, 9}. 2. The development of a prominent Q-wave in Leads I. and II., which tends to persist¹⁰. 3. Prominent P-waves often seen in Lead I¹¹. 4. Notching of the QRS complexes. 5. Arrhythmias such as extrasystoles, usually of the ven-

tricular type, paroxysmal tachycardias, frequently ventricular, auricular fibrillation and flutter. These arrhythmias are present in about 5% of the cases¹².

At times electrocardiograms will be seen which cannot be definitely placed in either the "T₁" or the "T₃" group. However, when the above described curves are observed in a series of electrocardiograms in which the form is constantly changing, there is no difficulty in diagnosing a myocardial infarction. It is thought by Barnes and Whitten⁵ and others that localization of the infarct can be made when the electrocardiogram corresponds to the "T₁" or the "T₃" type.

A lesion posteriorly at the base of the heart (EKG of the "T₃" type) is thought by some to have a better prognosis than an infarct in the apex, in the anterior surface (EKG of the "T₁" type), and there are those who feel that a shorter period of bed rest is therefore justified for the latter group. One of the reasons advanced for this opinion is that the heart wall is thicker at the base than at the apex, and, therefore, more tissue can be destroyed without a fatal result.

Conditions other than myocardial infarction, such as acute infectious diseases, especially diphtheria and rheumatism, uremia, pericarditis with effusion, drug poisonings, as digitalis and quinidine, massive pulmonary edema, dissecting aneurysm of the aorta, and spontaneous left sided pneumothorax, have been said by some authors to give electrocardiographic curves similar to those of coronary occlusion. Where serial records are obtained and correlated with the clinical history, it is rare that any such difficulty will arise.

In considering the treatment, a prolonged period of bed rest, of at least two or three months, is of primary importance, the patient not being allowed to do anything for himself, even being turned over in bed and fed by the nurse. Pain should be relieved by morphine, given in sufficient doses and frequently enough to relieve pain and promote rest,— $\frac{1}{4}$ to $\frac{1}{2}$ gr. every hour or half-hour for two or three doses is often necessary. Severe shock, with collapse, should be treated symptomatically, using caffeine sodium benzoate, oxygen by tent or nasal catheter, intravenous glucose, and external heat. The long-continued use of oxygen is often attended by gratifying results, not only in those patients

with marked cyanosis, but in those with frequent or continuous pain and weakness. While the length of bed rest may be estimated somewhat by the severity of the attack, the subsequent condition of the patient, and the electrocardiographic findings, yet no standard set of rules can be laid down, as each patient is an individual problem. In those with mild symptoms, and minor or transient serial electrocardiographic changes, the period of bed rest may often be shortened, as transient electrocardiographic changes characteristic of coronary occlusion may occur, with temporary ischemia of the involved myocardium, without death of the tissue; that is, the area of ischemia is supplied with sufficient collateral circulation to avert infarction resulting¹³. However, it is my opinion that many patients with minor symptoms or "silent" accidents have lost their lives by an insufficient period of bed rest, whereas, on the other hand, I have seen those with severe anginal pain, collapse and subsequent myocardial decompensation,—those with pulmonary edema, hemoptysis, and enlarged livers—who have recovered to good health, perhaps due in some degree to their frequently two, three and four months of absolute rest in bed.

In summary and conclusion, we have attempted to show:

1. That an arbitrary division of the patients with coronary occlusion according to their predominating symptoms is an aid to diagnosis.
2. A careful history supplemented by serial four-lead electrocardiograms often makes the diagnosis clear, and is especially helpful in the so-called "silent" group.
3. Adequate bed rest and constant nursing care is the most essential part of the treatment, and if instituted early may save the lives of those patients suffering coronary accidents with obscure and apparently insignificant symptoms and findings.

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DISCUSSION

Dr. James A. Walsh: This paper, as presented by Dr. Richter is commendable, particularly because of its completeness, and because he has given us an additional refinement in the study of coronary occlusion. There does not remain much to discuss when practically all of the details of the history, diagnosis and treatment have been reviewed.

However, I think there are a few points that might be mentioned. First of all, most of the patients and the relatives are interested in the prognosis as well as in the diagnosis. With the assistance of the electrocardiogram the former may be predicted more accurately in some instances. It has been my experience that patients showing a T1 type of electrocardiogram, and those with marked changes in the QRS complexes, do not do well. On the other hand, those with the T3 type have been more fortunate. This is of some value.

In the review of the treatment, you may have noticed that digitalis was omitted. I think this was purposely done. This drug, and those of similar pharmacological action, have no place in the treatment of this disease. The routine use of digitalis is fraught with far more danger than good. You have, after infarction, an already irritable myocardium and digitalis may set up an ectopic rhythm that may end with sudden death. Its only indication is marked congestive failure, and this is not common. The administration of quinidine from the beginning is advocated by many. I believe it is of real value. Patients who, after coronary occlusion, develop frequent extrasystoles, persistent auricular fibrillation or flutter, or paroxysmal tachycardia are in danger. These disorders of rhythm may be arrested and perhaps prevented by the use of quinidine. It must be given cautiously and discontinued with the advent of the usual signs of quinine intoxication, excessive sinus tachycardia, or intraventricular block, as detected by the electrocardiogram. I do not often use the vaso-dilating drugs. However, I have recently seen a case of persistent substernal pain, relieved by aminophyllin intravenously.

In conclusion I should like to say that although our primary concern this afternoon has been the diagnosis and treatment of acute coronary occlusion, it might be well for us to turn our attention and devote more thought and time to the prevention of the disease.

Dr. Richter: (Closing remarks): You will note the title of the paper was "Points on Diagnosis and Treatment." It is impossible to cover the whole subject of acute coronary occlusion in the twenty minutes allotted. I have used the vaso-dilators, especially the theophylline and theobromine compounds at times with apparently favorable results.

I agree with Dr. Walsh that quinidine is of value in both the treatment and prevention of ventricular

tachycardia. Digitalis is to be avoided, except in rapid auricular fibrillation and in selected cases of late congestive heart failure. In my experience digitalis at times appears to increase the irritability of the myocardium and favors the occurrence of extrasystoles and ventricular tachycardia. Theoretically it may further injure an already damaged heart.

Regarding the prophylactic treatment, there is some evidence that the condition is more common in the hypertensive, nervous individuals, especially those of sedentary habits, as compared to those who do manual work.

When we learn how to prevent atherosclerosis and arteriosclerosis we will also have solved the etiology of coronary thrombosis.

636 Church Street.

RENAL AND URETERAL ANOMALIES

WARREN WILLIAM FUREY, M. D.

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The incidence of renal and ureteral anomalies in the past several years, has served as a topic of intensely interesting medical discussion for the general practitioner, urologist and radiologist alike. The large number of these anomalies seen and diagnosed since the advent of intravenous or excretion urography is tremendous. Formerly, many of the indefinitely defined renal complaints resulting from these various malformations were overlooked or disregarded because of the hesitancy of physicians to submit these patients to the procedure of retrograde urography in the absence of a positive clinical indication. With the advent of the intravenous method, more and more of these patients were given the advantage of a rather thorough and comprehensive urologic and urographic examination. The result has been a definite increase, not only in roentgenographic urology, but in the number of these patients referred to the urologist for further observation and care.

Abnormal or altered urinary tract function and malformations with evidence of pathologic changes resulting, may be readily demonstrated by means of both excretion and retrograde urography, hence this should not be construed as an argumentative point in favor of either method. Both procedures are excellent, each has some advantage over the other and frequently, when used on the same patient, one

will give information not obtainable by the other method.

A normal intravenous pyelographic response however, generally results in the elimination of the urinary tract as a cause of the complaint. An abnormality, on the other hand, usually results in a hurried call for competent urologic consultation and advice. Then, if deemed necessary, retrograde urography should be utilized to obtain additional information and to definitely settle the diagnosis as due to renal or ureteral changes. This type of cooperation has brought out the fact that many more of the different types of anomalies exist than were formerly suspected. Further, it has been shown that these anomalies or malformations not only exist, but that they are frequently the direct cause of the pathologic process producing the so-called indefinite renal complaints. It has recently been stated "that fully 40% of all pathologic conditions of the kidneys and ureters are due to congenital anomalies, and that these malformations constitute the most extensive chapter in modern urology."

Renal and ureteral malformations predispose to pathologic changes through altered function of the organs involved, frequently resulting in urinary stasis or retention. Hydronephrosis, pyuria, pyelitis, nephritis, calculus, hydro-ureter, and ureteritis, to mention some of the possibilities, are often the result of anomalies.

The number and types of these anatomic variations is so great that a full discussion of the different varieties would be impractical. A brief summary of those most frequently seen would include:

1. Kidneys:

- (a) Variations in number, from total absence to multiplicity.
- (b) Variations in size and shape including,
 - 1. Cystic,
 - 2. Polycystic,
 - 3. Fused, or horseshoe kidney,
- (c) Variations in position and rotation,
- (d) Variations in internal structure including abnormalities in the number, size, shape and position of the renal pelves and calices.

2. Ureters:

- (a) Variations in number including:
 - 1. Bifurcated with single bladder opening,
 - 2. Reduplication with separate openings.
- (b) Variations in size, shape, and position,
- (c) Diverticula, and
- (d) Obstruction.

Any of these malformations may be unilateral or bilateral.

The clinical manifestations of these anomalies vary with the individual patient. Many of the patients present complaints that are not directly referable to the urinary tract, hence thorough clinical and laboratory examinations are necessary to eliminate the gastrointestinal tract, the gallbladder and the pelvic organs as the source of the complaint. Others may present definite clinical evidence of renal changes, that varies with the type of pathologic process producing the complaint. Not infrequently, the patients presenting the most leading clinical manifestations show a minimal amount of pathologic change and some of those patients with most extensive changes and obvious malformations give little or no evidence pointing to the urinary tract as the source of the trouble.

A patient with a complaint of fullness in the upper right side of the abdomen was found, upon physical examination, to have large nodular tumor masses in both upper abdominal quadrants. Intravenous and retrograde pyelograms demonstrated these masses as large, bilateral polycystic kidneys.

The mother of a youngster with a congenital pelvic ectopic kidney, stated that the child had a sore spot in the lower abdomen, and that he urinated frequently.

A history of repeated attacks of pyelitis was given by the mother of a child who was found to have an extensive hydronephrosis resulting from an aberrant vessel to the lower pole of the kidney.

Typical clinical pictures of ureteral calculi were given by two patients; one with a horseshoe kidney, the other with a bifid renal pelvis.

A patient complaining of incontinence, dating from birth, was found to have a complete reduplication on one side, with an ectopic ureteral opening in the urethra.

Lower abdominal distress was the complaint of a patient with a horseshoe kidney.

The roentgen findings in most of the well developed anomalies are usually sufficient in themselves to enable a conclusive opinion relative to the type of malformation present and they frequently demonstrate the type of pathologic change resulting. The preliminary or flat film will ordinarily reveal the size, shape, posi-

tion, and number of kidneys, and also the presence of radiopaque calculi.

The pyelographic examination will of course give necessary information relative to the internal structure of the renal pelves and the inner diameters of the ureters. The identification of most of the anomalies is, as a rule, perfectly obvious to medical observers, each having characteristics which serve to differentiate it from the other types. The roentgen evidence of some of the most frequently seen anomalies is given briefly to recall some of the salient features.

1. *Double pelvis and ureter.* There are many variations of this anomaly including bifid pelvis with single ureter, double pelvis with bifurcated ureter and single bladder opening and complete reduplication with double pelvis and double ureter extending to and both opening in the bladder. These may be unilateral, or they may be bilateral. The only evidence suggesting these anomalies on the flat film is the elongation of the kidney shadow. Positive identification depends upon the pyelographic examination. The pyelograms with completely filled pelvis and ureter show the division of the kidney into two pelves. The upper pelvis is frequently small and of a rudimentary type without clearly differentiated major and minor calices. Dumb bell type of pelvis is perhaps the most descriptive name for this deformity. The lower segment or pelvis is generally more nearly normal in appearance with well developed major and minor calices. Recognition of one of these dumb bell type pelves in a pyelogram should immediately suggest a double pelvis. Ureterograms will demonstrate the presence of bifurcated or double ureters and their point of entrance to the bladder. Urinary retention in the upper pelvis frequently results in hydronephrosis and occasionally calculi may be seen.

2. *Polycystic kidneys.* Large, irregularly outlined, ovoid masses, frequently extending from above the costal arch to the iliac crests may be seen on the preliminary film, in the presence of polycystic kidneys. Generally these are bilateral, but occasionally unilateral polycystic kidney is seen. The psoas muscle shadows may or may not be obscured. The pyelograms give a rather bizarre pelvic picture, with markedly elongated, spider-like thinning and irregularity of the major and minor calices, and rounding or occupying of the calices about individual

cysts. This is one condition in which the intravenous pyelographic method should be preferred to the retrograde because it eliminates the admittedly slight possibility of introducing trauma and infection in an already badly damaged kidney.

3. *Horseshoe kidneys* may be recognized on a properly made flat film. The isthmus fusing the two kidneys can be seen passing the midline and joining the kidney shadows proper. More conclusive evidence of this condition is obtained by pyelographic examination, the ureters pass lateral to the normal course and join the renal pelvis on the lateral side. The kidney pelves appear to be reversed or rotated with the calices pointing medially toward the midline instead of laterally as seen in a normal kidney. Occasionally the two pelves communicate with one another through fusion of the inferior calices.

4. *Aberrant vessel.* This is usually associated with extensive hydronephrosis. The pelvis is markedly distended and the calices so dilated that differentiation of major and minor calices is next to impossible. The ureteropelvic junction shows a constant small filling defect and in the absence of complications the ureter below is about normal in size.

5. *Ectopic kidney.* Absence of the kidney shadow on one side may be found in either congenital ectopic kidney or in a patient who has only one kidney. The pyelogram will, in the absence of obstruction, show the ectopic position of the kidney and the marked shortening of the ureter.

Case 1. Patient, a white female, aged 35 years, married, has two children. Complaint, fullness in the right upper quadrant of the abdomen. Past history essentially negative. Physical examination revealed a palpable tumor mass on both sides of the abdomen. The urine showed only a faint trace of albumin. Preliminary film showed the kidney shadows markedly enlarged. The kidney pelves were well filled following the intravenous use of diodrast. The pelvis presented a bizarre appearance, with unusually long, thinned calices and cupping about individual cysts. Retrograde pyelograms were used for confirmation, conclusion: bilateral polycystic kidneys.

Case 2. Patient, a white male, aged 26 years, had passed a small urinary calculus; no immediate complaint. The preliminary roentgenogram showed the kidney shadows low, with the lower poles close to the midline and apparently joined to one another by an isthmus of soft tissue which crossed the midline and appeared to coalesce with the kidney

shadows. Intravenous pyelograms showed the kidney pelvis well filled. The pelvis were reversed or rotated with the calices projecting toward the spine and the uretero-pelvic junctions were on the lateral sides of the kidneys, conclusion: horseshoe kidney with no evidence of calculus.

Case 3. Patient, a white female, aged 21 years, married, complained of pain over the right side of the abdomen. Preliminary film showed no evidence of renal shadows. Retrograde pyelograms showed the ureteral catheters in situ, following a normal course to the level of the fourth lumbar vertebra, where they curved laterally to give the "flower vase position," and joined the kidneys toward the lateral sides. The renal pelvis were of the reversed type with most of the calices pointed medially. The right renal pelvis was moderately pyelectatic and the calices were clubbed, indicating right hydronephrosis in a horseshoe kidney.

Case 4. Patient, a white male child, aged 11 years, complained only of a feeling of fullness in the left lower quadrant of the abdomen. Mother stated that a tumor mass had been found by a pediatrician during the course of a routine health examination. Preliminary film and intravenous pyelogram showed a normal, but slightly enlarged right kidney, but no evidence of a left kidney shadow, nor of any dye in the kidney region. The palpable pelvic tumor on the left side could not be seen. Retrograde pyelography was attempted, but the progress of the ureteral catheter was arrested just above the bladder and none of the dye passed beyond the tip of the catheter, most of it flowing refluxly into the urinary bladder. The bladder was somewhat displaced to the right. There was no evidence of urine passing through the ureteral orifice. At operation the child was found to have a congenital non-functioning, ectopic pelvic kidney with a short constricted ureter. The pathologist reported very little evidence of renal tissue in the sacculated remnant of the kidney.

Case 5. Patient, a white male child, aged 13 years, had had frequent attacks of pyelitis with continuous pain over the right kidney region. Many pus cells were found in all urine specimens examined. Retrograde pyelograms demonstrated a normal left kidney and a markedly enlarged right kidney, with extensive pyelectasis. The pelvis seemed to almost completely fill out the right kidney shadow. There was a persistent, small band-like filling defect at the right uretero-pelvic junction, which was interpreted as an aberrant vessel partly obstructing the ureter. The lower ureter was a little irregular in contour, otherwise normal in appearance. Operative attempt to relieve the constriction met with failure and nephrectomy was performed and followed by complete recovery.

Case 6. Patient, a white male, aged 43 years, complained of soreness over the left kidney region and gave a history of several attacks of left renal colic. Urine examination showed considerable

blood. A small calculus was found on preliminary roentgenogram. The retrograde pyelograms revealed a bifid type of pelvis, with the stone shadow included in the lower half of the pelvis. The calices were slightly clubbed. This was felt to be an embryologic attempt to form a double kidney. There was only one ureter. The calculus was removed at operation and followed by complete recovery.

Case 7. A double pelvis, with a bifurcated ureter. The branching of the ureter occurs at the level of the second sacral vertebra. The kidney shadow is unusually long, characteristic of a double pelvis. The upper pelvis is of the dumb bell type, and the pelvis and ureters are slightly dilated and distended, giving the impression of hydronephrosis and hydro-ureter.

Case 8. Complete left reduplication, with two independent ureteral openings on the left side of the urinary bladder. The upper pelvis, of the dumb bell type, is moderately pyelectatic and the proximal portion of the ureter is definitely dilated, indicating hydronephrosis and hydro-ureter. The right kidney has a single pelvis and ureter. The pelvis is moderately dilated and the ureter is kinked.

Case 9. Patient, a white female, aged 24 years, chief complaint urinary incontinence since childhood. Cystoscopic examination revealed one ureteral opening in the posterior urethra on the right side and two normal ureteral openings in the urinary bladder. Three ureteral catheters were inserted, retrograde pyelogram showed complete right sided reduplication with the ectopic ureteral opening in the posterior urethra draining the pelvis of the upper kidney. The left kidney was normal. There were scattered opacities medial to the left kidney region, apparently calcified glands. Heminephrectomy resulted in complete recovery.

Case 10. Patient, a white female teacher, complained of pain in the right lower quadrant of the abdomen. Cystoscopic examination showed the ureteral openings in normal position. The pyelogram did not show any anomaly or pathologic change. Ureterogram, however, showed a branched ureteral diverticulum passing upward at about the level of the first and second sacral vertebrae on the right side. This was interpreted as an embryologic attempt at the formation of a bifurcated ureter with double pelvis, but the process was arrested before these changes developed.

CONCLUSIONS

1. The incidence of renal and ureteral anomalies or malformations has increased tremendously in recent years, due to more thorough and comprehensive genitourinary examination.
2. Recognition of these variations as potential sources of pathologic changes, rather than as mere anatomic curiosities has resulted from the study of many cases.
3. Both retrograde and excretion urographic

methods give valuable information relative to the presence of these anomalies and enable the diagnosis of associated pathologic changes.

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DISCUSSION

Dr. Roswell T. Pettit, Ottawa: This paper is interesting to me because I had a patient come to me yesterday, a young woman nineteen years of age, married with no children, never had been pregnant, complaining of general abdominal distress. The doctor who referred her thought she should have a gastrointestinal examination. Most of the symptoms pointed to a vague indefinite gastrointestinal distress. I asked a number of questions and palpated the abdomen. She had tenderness and rigidity in the lower part of the abdomen on the right side. In pressing on the abdomen on the lower left side she had some tenderness, but she said it was not as marked as on the right side. The urine was negative as far as any blood or pus was concerned. The doctor referring her to me had had her under observation for six or seven months and was rather going blind on the thing. I felt the symptoms pointed to the urinary tract. It seemed to me the tenderness radiating to the flank on both sides rather indicated a urinary disturbance more than an intestinal.

We decided to begin our examination with an intravenous pyelogram. Very much to our surprise we found a double ureter and double pelvis of the kidney on both sides. Of course, it was a developmental abnormality. It is a question in my mind whether the double pelvis and double ureter would account for symptoms such as she had. We intend to refer her to a urologist but I would like to ask Dr. Furey whether the symptoms of vague abdominal distress with tenderness in the lower part of the abdomen on both right and left side could be caused by a developmental abnormality of that sort.

Dr. M. I. Kaplan: There is one point in the examination of the urological tract that has never been stressed which in my opinion plays a very important part in helping to make the diagnosis. That is the comparative size of the calices with the kidney proper. We may find large calices in a very small kidney and small calices in a very large kidney. I think the reason it has not been stressed is because most of the patients who come to us for radiographic study of the urinary tract have had renal colic and have been getting opiates of various types and individuals who receive morphine or any opiate usually get a distention of the intestinal

tract, the gas filling out the intestines and obliterating the shadow of the kidney. The shadows as seen by the pyelogram, whether by retrograde or intravenous method usually stand out very clearly without showing as clear an outline of the kidney itself. I am wondering whether Dr. Furey or others have used the new drug pitressin to see whether it really will cause expulsion of the gas without causing any disturbance to the patient. They claim the injection of this drug causes dehydration; therefore the intravenous pyelogram will be more concentrated, and by causing the gas to be expelled brings out the shadow of the kidney more clearly. I have not used it.

I am wondering whether we are not missing out on some very valuable points in diagnosis where we make a diagnosis of a normal kidney because the calices appear normal, the pelvis appears normal but you do not get a comparative study between the calices, pelvis and kidney itself.

Another point I wish to bring out is that the use of either intravenous or retrograde pyelogram in polycystic kidney is rather a dangerous procedure. I have some one very close to me whom we almost lost because of the intravenous pyelogram taken in a case of the polycystic kidneys. Another case I recall is one that almost died because of the retrograde use of the dye in polycystic kidneys. I think one can tell almost as much from the ordinary flat film as from the intravenous or retrograde study in these cases.

Dr. T. J. Wachowski, Chicago: We have had a little experience with pitressin put out by the Parke Davis Company and prostigmin put out by the Roche Company, after we saw the exhibit from the Detroit Receiving Hospital in December at the radiological meeting and find it pretty good. Dr. Lindon Seed of the University of Illinois has been working with pitressin and finds it does produce anuria for about twenty-four hours. We also dehydrate our patients prior to intravenous pyelography withholding fluid from about six o'clock the evening before and have had good shadows. We find no evidence of decreased excretion of the dye and it will cause the patient to have a bowel movement and expel all the gas. So far we have had no contraindications to its use except hypertension, persons suspected of angina and possibly debilitated cases.

Dr. Harry Olin, Chicago: I would like to emphasize one point in relation to aberrant vessels in connection with some of these congenital anomalies of the kidney. It has been shown that if the aberrant vessel is not ligated in order to conserve the proper nutrition of the kidney and since most of the ureter is either tortuous or redundant, the surgeon I think most times will seek to transplant the ureter in order to release pressure from the vessels overlying the ureter. As roentgenologists, we should bear in mind that some of this destructive work, as taking out half the kidney or sometimes the whole kidney, may be avoided if the circulation of the aberrant vessel remains intact and is not interfered with.

Dr. Furey (closing the discussion): I would like to say in answering Dr. Pettit, that the cases I have seen were those in which the complaints have been directly referable, not to the anomalies themselves, but to asso-

ciated pathologic changes resulting from the presence of the anomaly.

Dr. Pettit: There was no pus in the urine.

Dr. Furey: Many calculi and other pathologic urinary changes are unaccompanied by pus and blood in the urine. It is not uncommon to find normal urine with anomalies. The thing which impresses me about these patients is that most of them, except those in colic, have no complaint of any kind pointing to the kidney as the source of the trouble, but in almost every one we have been able to show some pathologic change resulting from the anomaly.

Dr. Pettit: Do you think an anomaly of this sort would cause these vague gastrointestinal symptoms?

Dr. Furey: If the kidney and the pelvis were normal, without apparent mechanical obstruction, I would say, no. In the cases we have seen the complaints have nearly always resulted from the pathologic change and not from the anomaly.

What Dr. Kaplan has said is well taken. I have tried to show slides that demonstrated the anomalous condition best, and not those of the normal side. It should be remembered however that bilateral pyelograms are essential for complete diagnosis.

CARCINOMA OF THE COLON

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MOLINE, ILL.

Until the day arrives when the specific cause and cure of carcinoma become known, it is obvious that we will have to continue to try to overcome this dread disease with the means at hand. It is equally true in carcinoma of the colon as well as in any other malignancy that if an early recognition of this condition is possible, it is much easier to cure. The general characteristics of carcinoma of colon being the same as any other malignancy, we go on the hypothesis that this condition is at first localized and then and only then is it amenable to treatment and cure no matter what procedure is followed. This paper does not permit a lengthy discourse on the theories of the cause of carcinoma but the views expressed and the suggestions made are in accordance with the common accepted knowledge concerning this disease. With so much research being done all over the world and with the ever increasing knowledge of malignancy, it is to be hoped that before many years are passed, the true nature and a specific cure of this condition will have been found and that we can definitely place our

finger on that elusive something which causes these malignant reactions, masses or processes which we call cancer.

It is the purpose of this paper then to point out some of the known and important factors concerning carcinoma of the colon. Since the colon is a large organ or a large part of the intestinal tract, it is obvious that malignancy as affecting one part would be different from that affecting another and the symptoms produced would vary. Therefore, the physiological and anatomical characteristics together with the general characteristics of the growth to a large extent determine the symptoms relative to the location of the carcinoma.

The physiologic function of the colon as we know is digestive, absorptive and propulsive. The right half of the colon beginning at the cecum and to the middle of the transverse colon functions more as digestive and absorptive, absorbing water and mineral. The remaining part of colon acts more as a storage and its main function is one of propulsive, passing the contents, at this point much less liquid, into the rectum for evacuation. Peristaltic waves are similar to those of the small intestine but vary. There are also waves of reverse peristalsis and circular muscle contraction to churn the contents so as to further increase absorption. When absorption is completed there are waves of mass peristaltic action to pass the contents on. The malignancy is more prone to appear at certain points of constriction or irritation. Seemingly also, this has a lot to do with the types of growth found of which there are two main types:

1. The adenocarcinoma cubical celled or the expansive type—the tendency in this type is to grow outward to form large massive growths, grows more rapidly, is more infiltrating and spreads by continuity. This type is also more prone to infection, abscess and sinus formation: is ulcerative and bleeds easily and is more common in the right half of the colon and not so prone to obstruction.
2. The second type—the adenocarcinoma cylindrical celled or annular type has a tendency to grow into the lumen, to contract the bowel and to produce obstruction—the mass as a rule is smaller, grows slower and tends to affect the left half of colon more frequently.

There is a third type, less common, the so-called gelatinous carcinoma. This is of a large massive type containing gelatinous or mucoid material within the carcinomatous cells. Very often these grow in large masses filling the entire abdomen, being lobulated some of which shell out en masse. Carcinoma of the colon is usually single but may be multiple, but is rarely so.

Distribution of the lesion or the order of frequency in Lahey's series which corresponds very closely with other observers, is as follows:

	Approx. Per cent.
Rectum and rectosigmoid.....	58
Sigmoid	13
Cecum	9
Descending colon	5
Transverse colon	4
Ascending colon	3
Hepatic flexure	3
Splenic flexure	2

Carcinoma is slightly more common in males but rectosigmoid is much more common in males than females.

Now as to the symptoms; there are none that are strictly pathognomonic and all symptoms are vague in the beginning. The insidiousness of the disease is largely responsible for these cases coming to us for diagnosis late and reduces the likelihood of cure. The patients are usually of middle age or past forty although many cases occur earlier so we must not lose sight of this fact in the diagnosis. These patients have usually been previously free from digestive disturbances with no change in diet. Since these symptoms are vague and numerous, it is highly important to get a complete history of any and all symptoms since some are present and other absent.

Usually the earliest symptoms are digestive disturbances such as diarrhea or constipation or sometimes both, alternating, though pain may be the first symptom—then later there is the abdominal soreness, pain or cramps, soreness around the umbilicus, distention of the abdomen, gurgling and rumbling of gases, belching, nausea and vomiting, mucus, pus and blood in the stools, tenesmus-feeling of incomplete emptying of the bowel, loss in weight, beginning anemia and soon the presence of the tumor, visible peristalsis in the obstructive type, fever when accompanied by infection and then lastly

the typical picture of cachexia. When all symptoms are present the picture is one which diagnoses itself, therefore, we must begin action with only a few of the vague earlier symptoms.

Given these symptoms, we must supplement our general examination with the examination of the blood, urine and the feces. Continue the examination with the fluoroscope and the x-ray, not only with the barium meal but just as important or more important the opaque enema and also the proctoscopic examination and the examination with the finger in the rectum. The type of pain may give us a clue since the pain is more or less constant dull ache, with tenderness on examination or pressure, the location of pain being as a rule, in the region of the part involved, pain around the umbilicus referring especially to involvement of the transverse colon. The pain is rarely severe enough for an opiate except in the obstructive type and unlike the gallstone colic or a pain from appendicitis or strangulated hernia.

Any change in habit of bowel movement should mean something. A patient who has always been regular, develops an irregularity, either diarrhea or constipation. Be suspicious of any symptoms, however inconsequential and investigate thoroughly. It is much more difficult to discover early malignancy of the colon than most other abdominal conditions. If a mass, no matter how small is found in the abdomen, it demands immediate diagnosis and immediate exploration if diagnosis cannot be made. Diagnosis is more readily made in slender than obese individuals, especially is this true relative to the palpability of the mass. In 5-10% the symptoms of acute obstruction bring the patient to the physician.

In the past year, a prominent physician came under my care with this condition—requiring immediate decompression. A colostomy was done and later an annular carcinoma of the rectosigmoid was removed. When this can occur in an individual who is trained to make diagnosis, how can one expect the laity to come for early examination? Briefly, on going over his history, he had lost some in weight but ascribed this to overwork. He had passed some mucus and blood but had had hemorrhoids intermittently for many years and ascribed the passage of blood to this condition. Those were the only two warnings he had except a slight

abdominal distress until the symptoms of an acute obstruction came on. However, had he considered the few symptoms present, he should have been suspicious of some pathological condition and been examined. At any rate, any patient coming for consultation with any one of these symptoms should be subjected to a thorough and rigorous examination. We must remember that hemorrhoids are often present in this condition, likewise, fissure and fistulae, any of which might cause blood to be present in the feces. When the carcinoma is in the sigmoid there is more tendency to tenesmus-feeling of incomplete emptying of the bowels. There are as a rule ribbon-like stools or small firm lumps are contained in the feces together with mucus, blood and debris. Blood is however, usually present in the feces in carcinoma located anywhere in the colon. I need only to mention distention of the abdomen, gurgling and rumbling of gas, nausea and vomiting, visible peristalsis and acute severe pain and toxemia to picture acute obstruction in this condition.

As a rule, there is nothing significant in temperature. In fact, most cases have no rise in temperature until late or it may be subnormal. However, in carcinoma about the cecum the large massive type with secondary infection, abscesses and fistulae, there is as a rule increase in temperature. The examination of the blood shows a progressive anemia, very often a leukocytosis. All of these cases should be fluoroscoped and given a barium meal and what is more important an opaque enema. When this is done, the suspicion is very often verified by these findings. The proctoscope helps us only, of course, in those cases involving the lower part of the colon but gives us definite information when the lesion is located there. This evidence may be augmented by digital examination of the rectum. A small percentage of these cases give us a history of a previous malignancy as of the skin or other structures of the body.

In considering the differential diagnosis, there are a few conditions which are most likely to be confusing. To mention briefly, they are the following: tuberculosis of the intestinal tract and peritoneal tuberculosis, enlarged mesenteric glands, intussusception, diverticulitis, chronic appendicitis, duodenal ulcer, cholecystic disease and if located in the splenic or hepatic flexure some kidney lesions. However, intensive exam-

ination shows that most of these conditions have some symptoms which are not common to carcinoma of the colon.

The prognosis in carcinoma of the colon depends on numerous factors. It should be favorable because the neoplasms are limited and are usually slow in growth and are rather late to metastasize and the secondary lesions are usually located in the regional lymphnodes. It is unfavorable because of its late diagnosis. As a rule, a favorable prognosis can only be made if radical extirpation can be done early, before any visceral metastasis and glandular involvement have developed. Prognosis depends on the age of the individual, the older the patient the more favorable as the very young seem to be particularly malignant. Loss in weight is always a bad sign. The general condition of the patient is important—whether there is any cardiac or renal impairment. The amount of anemia or cachexia present should be noted. The duration of the disease whether of long standing or rapidly progressive. The presence of metastases is always a serious complication. Size, however, is not always a prognostication since some are very large and are still localized. However, if there is any fixation to the abdominal wall or to the surrounding viscera, it shows that the process is well advanced. The presence of infection as shown by abscesses or fistulae show it to be well advanced. Those which tend to grow outward, the larger type, are usually worse than those which grow into the bowel. A further factor is heredity, since with a history of carcinoma in the family, there is a tendency for the host to be less resistant.

Summary and Conclusion: Summarizing briefly, we know that in order to relieve and cure this condition, we must first recognize the very earliest symptoms and then by further means of examination, make as early a diagnosis as possible in order that surgical intervention may be of benefit or accomplish its end. At present surgery seems to be the only method of attack in this condition. Carcinoma of the colon is usually not an emergency problem except in the acute obstruction, so careful pre-operative preparations can be made. Given a patient even with an advanced carcinoma of the colon, if there is any hope of relief, he should by all means be given the benefit of surgical procedure indicated. If surgical intervention

for relief only is done such as a colostomy—an opportunity is afforded to determine extent of involvement and then the surgeon can determine if any further radical procedure should be instituted. In the removal of carcinoma of the colon many types of operation are performed. Choosing the type of operation is most important and requires keen surgical judgment and technical skill for its successful performance.

DISCUSSION

Dr. O. E. Nadeau, Chicago: Since we do not know the cause of cancer, the discussion of this subject of course resolves itself into early recognition and early treatment. Dr. Freeman has told us about making early diagnosis. This is the most important part of the subject. One phase should be taken into consideration, that is, the education of the public. They are getting more cognizant of the symptoms of cancer in general. They are hearing about cancer of the rectum and the changes in bowel habits, particularly after the age of 40, and if there is any pronounced change after that age, they get the idea that there might be some kind of obstruction. That is helpful.

Another thing is the education of the doctors themselves. They have improved a good deal. I was reading a series of examination questions and answers yesterday and found this subject well covered by senior medical students as to early symptoms and signs of carcinoma of the rectum. However, so far as certain procedures are concerned, they are no better than they were ten or fifteen years ago. One thing is about soiling their fingers. They know it is proper to do a rectal examination, but they do not like to do it. A greater proportion of doctors make rectal examinations now than was the case years ago, but some do not do so, and it is true that they are not being done as frequently as they should be done. This is especially important in view of the fact that about 70% of the cases are in the rectum or rectal sigmoid where they can be felt with the finger. Then there is the matter of introducing a proctoscope. It is not complicated. Just a tube long enough and wide enough with a glass on one end, with an air bulb for pressure—one can look in and see what the condition is. Of course, as to x-ray and all other methods which help in diagnosis, that should be done early.

It was very interesting to note Dr. Streicher's exhibit this morning. The average duration of symptoms is twelve to eighteen months. When a patient comes to the doctor he has had a year to a year and a half of symptoms. That is still a fact in spite of all the education that has gone on. As to treatment, there are two operations that every surgeon ought to learn to do who does emergency work. For instance, in the case of intestinal obstruction, do a cecostomy, pull out the cecum through a McBurnay incision and suture it to the skin. That will save a lot of cases with obstruction. Mikulicz's operation for carcinoma of the sigmoid

is very simple. Any other surgery can be done later, but an operation of this sort frequently saves the life of the patient.

Dr. M. H. Streicher, Chicago: There are many interesting points for discussion in this paper. I wish to refer to some of these. I am certain that Dr. Freeman and Dr. Nadeau omitted these because of lack of time. It is important to recall that although the incidence of carcinoma of the colon is predominant on the left side, the operative mortality is considerably higher on the right side. Among other factors that may influence the incidence, is the difference in the distribution of the blood supply and the close proximity of the left ureter and the sigmoid. If one chooses the abdominoperineal method of resection he will of necessity consider the pelvic floor. It is interesting to note the controversy in the English literature as to whether the floor should be closed by suture or be permitted to close by scar formation. Apparently, fewer complications are met with in cases in which the floor is not closed by suture.

Dr. A. L. Stearns, Chicago: Many times you will find a palpable tumor on the right side which you are quite sure is carcinoma of the cecum, but upon x-ray examination, with the aid of a barium enema, it is found to be carcinoma of the sigmoid which has moved to the right side. I would also like to emphasize the importance of early examination of the stools for even traces of blood, which is very significant in early cases of carcinoma.

Dr. D. B. Freeman, Moline: The method of treatment of carcinoma of the colon could be discussed for the rest of the day, but there is one important thing to do if there is an obstruction, that is to relieve it, either by colostomy or cecostomy. It is also true that you might find the mass on the right side even in involvement of the sigmoid. Most of the time with a barium enema you can trace out the sigmoid pretty well. Operative procedures vary greatly, depending upon the location of the carcinoma.

OCCURRENCE OF VIRUCIDAL SUBSTANCES IN PATIENTS WITH POLIO-MYELITIS: BEARING ON SERUM TREATMENT AND VACCINATION

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During the past year, attempts at vaccination of man against infantile paralysis have been made.^{1,2} Although suspended for the present,

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because of the suspicion that paralytic poliomyelitis followed vaccination in a few instances,³ it is not unlikely that the same or similar methods will be tried again in man as soon as it is determined that the risk of vaccination is not unduly great. Suspicion has been raised in some quarters^{4, 5} that convalescent serum has been without effect in treatment of the acute disease of man. While controversy still goes on concerning both active immunization and passive transfer of immune substance for therapeutic purposes, we would like to review the fundamental conceptions upon which these methods have been based.

Vaccination or active immunization has been carried out with monkey spinal cord bearing the virus of the disease, modified in such a way as to largely if not completely attenuate the virus (formalin, Brodie¹) or slightly modify it by a substance long known to lessen the toxicity of certain bacterial toxins, sodium ricinoleate (Kolmer²). As a further preliminary argument prior to application of vaccine to man, it is said that a strain passed through monkeys has lost some of its infectivity for man. In addition, the route of administration (subcutaneous and intracutaneous) leads to but very few instances of the active disease even in experimental animals. However, in the instance of virus treated with sodium ricinoleate, it had been shown previously that such a preparation produced the disease in a few instances in experimental monkeys.⁶ The presence of some live virus in this latter preparation was said to be an advantage² since it was believed that live virus was necessary for production of immunity. It was not surprising that the virus preparation mixed with sodium ricinoleate (Kolmer vaccine) did produce a number of instances of paralytic poliomyelitis⁷. The evidence for the danger of the Brodie vaccine is not clear cut. Fewer cases have occurred after administration of the Brodie vaccine. In three instances the interval between vaccination and the onset of the disease has been so long as to make it unlikely that the vaccine produced the disease. Epidemic poliomyelitis with proven opportunity for contact infection was present in the locality in all five of these instances. It is possible that another trial of this vaccine is warranted in interepidemic months. It has been shown that virus neutraliz-

ing antibody is produced after administration of these vaccines. The significance of this fact as an argument for the use of vaccine to protect against the disease is lessened by the finding by Aycock and Hudson⁸ that sub-clinical immunization by natural dissemination of the virus proceeded at the same rate in unvaccinated persons in the same locality.

The question might be raised if man always acquires an effective immunity against poliomyelitis. In the United States and Canada during the past twenty years, 17 cases have been reported of a second attack occurring years after a first, including two cases that we have seen.⁹ This is an attack rate of 11 per 100,000 calculated from the 150,000 reported cases. While these data are not statistically significant, this is many times the average rate for these years. The rarity of the disease during the first year of life and the low incidence among adults point to a relative immunity enjoyed by these groups. The fact that a large percentage of individual serums of these groups neutralize the virus of poliomyelitis is now well established and is the obvious explanation of these low attack rates. Are the neutralizing substances an accurate expression of immunity in this disease? Can resistance be present in their absence? Can the nervous system be invaded by the virus in the presence of neutralizing antibodies (humoral immunity)? Are there other factors of defense against the virus (mechanical factors and tissue immunity)? The replies to these questions would completely answer the question of effectiveness of poliomyelitis vaccination, were the data known. We will present below some experiments upon the acquisition of the neutralizing substances during an actual attack of the disease.

Pathogenesis of Poliomyelitis. Mechanism of Infection. The contributions of Fairbrother and Hurst,¹⁰ Jungeblut and others¹¹ have established beyond peradventure that the virus of infantile paralysis travels largely if not exclusively in the body by neural pathways. Resistance to intranasal infection after section of the olfactory tracts, as well as blockage of spread of the virus after section of peripheral nerves are an adequate demonstration of this fact. It is considered that the nasal and pharyngeal zones are the usual if not the only portal of entry of the virus into the nervous system.

Indeed, it is probable that many persons har-

bor the virus in the nasopharynx, it being in more or less stable equilibrium with the host. Such conditions might be upset by exogenous factors. Tonsillectomy¹² and extreme muscular exertion¹³ have been reported as precipitating an attack of poliomyelitis with the characteristic incubation period. The puzzling epidemiological fact, observed many times a year in the seasonal endemic poliomyelitis of this country, of cases occurring in isolated areas where personal contact can be excluded except through healthy intermediaries, may be explained by parasitization of the nervous system by virus carried in equilibrium with the nasopharynx. This hypothesis has already been confirmed by the isolation of the virus from the nasopharynx with subsequent development of infection. Kramer¹⁴ has reported the isolation of the virus from pooled specimens removed by tonsillectomy in a general hospital. Ponderous technical difficulties do not allow the easy multiplication of such observations. The finding of large numbers of adults in the general population who carry neutralizing substances in their blood against the virus is indirect evidence of the widespread dissemination of the virus. From the practical point of view, there promises to be a method available that will increase the normal resistance of the nasopharynx to virus. Treatment of this area by alum, tannic and picric acids, and by mercurochrome has been signally effective in the hands of three groups of investigators¹⁵ of the experimental disease. Application of these measures for prophylaxis in man awaits only the opportunity.

Origin and Occurrence of the Virus-neutralizing Antibodies. While contact with the virus is the only proven method of producing neutralizing substances in the blood of animals, there are a surprising percentage of human and monkey convalescents whose blood is devoid of these virucidal substances. Only recently has the blood of a large number of human convalescents been examined, and the full force of this fact become evident. These findings have been summarized by us in another publication.⁹ The percentage of convalescents *without* neutralizing substances in the blood has varied in the hands of different investigators from 12.1 to 64.1. This latter group was thought to be exceptional because they were treated in the acute stage with convalescent and antiviral animal serums. Of a total of 183 convalescents, 39.8% were without antibody.

On the other hand, a larger percentage of adults, drawn at random from the populace and who have had no obvious exposure to the disease, carry neutralizing substances in the blood stream against the virus. The incidence of antibody in this group ascends with increasing age. The analogy is quite similar to diphtheria, and may be due to repeated subclinical exposures to the virus. That the presence of these neutralizing substances signifies the immune state may be questioned in face of the newer ideas of tissue immunity. On the other hand, as quantitative data accumulates, the analogy to diphtheria may be drawn even more closely, as it is well known that a certain percentage of Schick negative individuals are susceptible to clinical diphtheria. In a tabulation⁹ of the numbers of normal individuals chosen at random from the general population, 31, 58 and 73% respectively from the 0-4, 5-14 and 15 years and greater age groups possessed neutralizing substances against the virus.

No difference has yet been found between the virus neutralizing antibodies of "normal" human blood and those of convalescence. Although identical, there is a division in opinion as to their origin. Most investigators believe them to be the result of specific contact with subinfective doses of virus, but another group holds that physiological factors of growth, maturation and menstruation as induced by endocrine activity are responsible for some of the neutralizing substances. There is also some evidence that contact with the virus stimulates production of the neutralizing substances in man. Kramer¹⁶ and Fairbrother and Brown¹⁷ have placed on record actual instances in man where contact with the disease lead to the production of immune substance, while Trask and Paul¹⁸ have made similar observations upon the abortive types of the disease. The opposite view that the abortive and nonparalytic types of the disease are a result of an adequate amount of pre-infection antibody is postulated by Eagles¹⁹ upon serum pools from these three types of the disease used for treatment in the 1934 epidemic in Denmark, and by our titrations of serum during and after an attack (*vide infra*). The origin of the virus neutralizing principle in human placental extracts (McKahn²⁰) is not certain.

A peculiarity of the virus of poliomyelitis that requires some comment at this point is its weak antigenicity. While antibodies and solid im-

munity are readily produced by nasal spraying with other viruses (e.g. St. Louis Encephalitis and Louping-ill), similar experiments with susceptible monkeys do not even lead to the development of virus neutralizing substances in the blood. Subinfective or modified virus given to monkeys by the subcutaneous route seldom leads to immunity against intracerebral or intranasal infective doses, although virus neutralizing substances are produced, particularly if repeated doses of the immunizing preparation are given.^{21,22} Even the vaccines, lately in use, have not yielded significant quantities of humoral antibody in the hands of all workers.²³ The underlying cause of this poor antibody response may be the lack of antigenic mass, it being well known that many viruses remain active in logarithmic dilutions (Vaccinia, herpes and St. Louis Encephalitis), while the poliomyelitis virus rapidly becomes subinfective on dilution. While other viruses develop complement fixing, precipitating and agglutinating antibodies, it has now become well established by reports from several laboratories^{24,25} that the neutralizing substance is the only antibody associated with contact or infection with the poliomyelitis virus. Skin tests for susceptibility have likewise been negative in the hands of most workers in this field.²⁶

Neutralizing Antibodies During the Acute Disease and During Convalescence. It was our opinion that observations should be made upon the level of neutralizing antibody as early as possible in the acute disease of man, and again later *in the same cases* in order to determine the

actual effect of an attack of the disease on the level of neutralizing substance. Antibody level should, if possible, be correlated with outcome of the disease to see if there is a level that will determine a nonparalytic or mildly paralytic form of the disease. Table 1 summarizes the results of *in vitro* neutralization tests upon the serums of 14 patients²⁷ during an acute attack of the disease. Only eleven serums were available for testing three to five months later. One patient,²⁸ an adult, was observed to have a greater than average amount of neutralizing substance even twenty-four hours before the onset of paralysis. This observation appears to be the first on record of evolution of paralysis in man in the presence of neutralizing antibody. Seven of these cases were purposely selected after convalescent serum had been administered to see what effect, if any, the administration of such low titre serums had upon the antibody level during the acute stage. The effects of passive transfer were in unmistakable evidence in only one patient (D. R.), but he had received 80 cc. of serum on two occasions only three days and one day before the first blood sample was drawn. From the fact that three months later he was entirely without neutralizing antibody suggests that none was present prior to the attack. The severity of the disease and the amount of recovery has no correlation with the level of immune substance either during the attack or during convalescence. It is quite unlikely that the high level of immune substance in patients B. W., D. B., and W. R. C. was the result of the current attack.

TABLE I
Neutralization of Virus by Serum Early in Poliomyelitis in Comparison to the Convalescent State

Patient	Age	Clinical Type	Day of Paralysis on which Blood was Taken	Ten Paralyzing Doses of Virus Neutralized by Serum in Dilution of:			Time (Months)
				Initial Sample	Later Sample		

No Serum or Serum Given after Blood Sample							
B. W.	9	Mild residual paresis	12th	1:100+	1:100+		5
D. B.	11	Non-paralytic.....	5th§	1:100+	1:100+		5
L. S.	3	Residual—one leg	9th	1:2	1:2		3
R. S.	8	Initial weakness. No residual.....	6th§	0	0		4
B. R.	12	Residual—one leg	7th	0	*		—
W. R. C.	45	Preparalytic. Residual paresis both arms and legs	**	1:20	1:80		3
S. S.	6	Residual, one leg	6th	1:1	1:1		4
Convalescent Serum Given Prior to Taking Blood Sample							
D. N.	8	Initial leg paresis. Full recovery.....	6th	1:10	*		—
J. H.	12	Extensive residual paralysis both legs and hips	5th	1:2	1:5		6
P. J.	2	Paralysis both legs. Residual one leg	5th	1:1	0†		4
L. P.	8	Bulbar with palatal paralysis	5th	1:5	*		—
E. S.	10	Residual both legs	5th	1:1	1:2		3
M. H.	7	Residual both calves	5th	1:2	1:2		3
D. R.	14	Residual lower spine, hips and both legs...	4th	1:5	0		3

*—Second blood sample not obtained.
†—1:1 failed to neutralize. 1:5 neutralized; latter probably a false positive.
§—Non-paralytic case; date on which serum was drawn was the number of days after onset of temperature.
**—Blood obtained one day before the onset of paralysis.

The series, as a whole, implies that the disease may evolve in the presence of neutralizing antibody. This is quite clear in the instance of W. R. C., from whom serum was taken a day prior to paralysis. On the other hand, patients P. J., R. S., and B. R. demonstrate very little or no antibody in the blood at any time, yet the severity of the disease and the amount of permanent motor damage is not greater than in other cases of the series.

That the amount of neutralizing substance found in the early samples is the direct effect of the current attack is minimized by the irregular appearance of immune substance following the experimental disease induced by intracerebral inoculation in monkeys. In similar tests upon monkey serums, made in parallel with the above observations upon human cases, we found neutralizing antibody not to occur until the sixth to fourteenth day after paralysis and then irregularly. No neutralizing substances were observed at any time during ten days after the onset of paralysis in 3 of 7 animals. One animal did not acquire these substances until between the third and eighth week after paralysis. Such results were independent of the test dose of virus used (3 and 10 paralyzing doses). Jungeblut has also recently reported that resistance to intracerebral reinoculation which is universal in convalescent monkeys does not depend upon humoral antibody.²⁹ In this connection, the experiments of Paul and Trask,³⁰ who showed monkeys to be susceptible to cerebral reinoculation by a recently adapted human virus when convalescent from an attack conferred by a passage strain and the converse should be recalled.

Significance of Neutralizing Antibodies in Serum Therapy. Evaluation of observations upon the effect of convalescent serum treatment of the disease are fraught with difficulty, since the severity and types of the acute disease vary from epidemic to epidemic and even in the same epidemic. Statistical analysis of certain large epidemics has failed to elicit favor for convalescent human serum except that the earlier the serum is used in the acute stage, the less is the incidence of either acute or residual paralysis. Clinical observations that have been made of a rapid response to the administration of serum, of a rapid response by a drop in temperature and improvement in symptoms cannot be disregarded. It is questionable if treatment of one group of

cases with serum, withholding it from others has been justifiable from either the administrative or scientific point of view.

Experimental monkeys cannot be used to evaluate a serum to be applied in the human disease, since for reasons as yet poorly understood the disease of these animals is fulminating. The endemic types of the human disease are especially unlike the experimental counterpart, the former having a smoldering and often nonparalytic course. Even in epidemics reported before 1933, from 70 to 80% of cases were nonparalytic types. In certain recent epidemics in Denmark and in southern California less than 10% have been paralyzed at any time. It is entirely probable that preparalytic cases are seen in this stage because they are mild cases. For example, the general mortality in the epidemic of 1931 in New York City was 12.2%, while among the preparalytic cases that received no serum the mortality rate was only 0.9%.

Reference should not be omitted to the results of treatment with convalescent human serum to be found in recent reports. Tebbutt and Helms³¹ observed a lower mortality in the cases treated in the preparalytic stage of 3.3%, as contrasted to 11.8% in the untreated controls seen after paralysis was present. Again in this report there was evidence that the preparalytic cases presented milder paralysis and a longer preparalytic period. Jensen³² thought that the earlier after the onset of symptoms that treatment was applied, the less the incidence of paralysis. If applied three days or more after the onset of symptoms in the preparalytic period, there was little difference in the percentage developing paralysis. Cowie and his co-workers³³ have reported no residual paralysis in 80 preparalytic cases treated with both human convalescent serum and transfusions from normal adults. There was but one paralytic case observed in this series; this rapidly cleared. Symptomatic improvement was noted even in certain paralytic cases. Lastly, Levinson³⁴ has treated 149 preparalytic cases of the seasonal endemic type of poliomyelitis in Chicago during the past four years. He states that the incidence of paralysis has been negligible and most of the temporary weakness disappeared later. He, too, has been impressed by the amelioration of symptoms in both the preparalytic group and in the paralytic cases with smoldering fever or acute recrudescence.

As specific treatment is continued during the next few years, the efficacy of *concentrates from antiviral animal serums* having advanced neutralizing potency should be evaluated. Titrations of pools of convalescent serums show only a moderate amount of neutralizing antibody. It is possible that tested human convalescent serum or normal human serum of high antibody content would be more effective in practice. Another source of antipoliomyelitis neutralizing substance that may be available for human therapy is human placental extracts (McKahn²⁰). We have recently determined that these preparations contain more neutralizing antibody than the average of convalescent serum pools.

SUMMARY

Since poliomyelitis seems to be an exclusive disease of the nasopharynx and nervous system in man, the irregular extraneural migration of virus is thought to explain the irregularity of production of neutralizing antibody. Infection can be blocked by peripheral nerve section or by section of the olfactory tracts. Chemical blockage of infection at the nasopharyngeal portal of entry appears to have been demonstrated recently. This later method may have some value in prophylaxis of the human disease.

The specific virus neutralizing substance in poliomyelitis is unique in that a greater number of adults without history of contact or infection possess these substances than convalescents from the disease. The average concentration of immune substance in normal adults is equal to or greater than that carried by convalescents. The importance of an actual attack of poliomyelitis in the production of these substances is minimized by our serological studies.

Convalescent and other specific serum therapy should be continued, as there is no evidence that it is not of value. On the other hand, symptomatic improvement following serum administration is almost universal. There are indications that preparalytic poliomyelitis in man is a naturally milder type of the disease than the cases seen after paralysis is present. At the present time specific vaccination is considered to be too dangerous to be applied to man without careful supervision in a controlled study in non-epidemic months.

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28. For the samples of blood from the preparalytic case we are indebted to Dr. M. A. Gifford of Bakersfield, Calif.

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DISCUSSION

Dr. H. J. Shaughnessy, Springfield: I think Dr. Harmon should be congratulated for his very able and very analytical discussion of a very controversial field of investigation. His own findings are extremely interesting, even though most of us who have had anything to do with this field find it very difficult to harmonize them with the orthodox views on the subject.

The essayist and I have discussed many points along this line and I think he will pardon me if I bring up certain points which I think bear on his discussion. In the first place, I think it should be remembered that there is a possibility that the pathogenesis of the disease in man and in monkey may be somewhat different. All of the experimental work reported by the essayist has been done, of course, on monkeys. In the disease poliomyelitis in monkeys, we are dealing primarily with a neurotropic strain which has been adapted to the

monkey by repeated transfers into the cerebrum. Therefore, the virus of poliomyelitis possibly behaves in a different manner in the monkey than the human virus in man. We have a similar basis for this view in the case of the yellow fever virus, which is primarily a visceral virus but which can be adapted, by repeated intracerebral transfers, so that it becomes neurotropic and when it does become neurotropic its reactions in the animal are quite different from the normal strain. That might explain some of the results which have been obtained by the essayist.

In the second place, the neutralization tests reported here were made with monkey passage strains of virus. Of course, practically all such studies have been made with passage strains because it is very difficult to obtain human strains and work with them. By human strains, I mean those which have been just isolated from the human host and have been transferred only through a very small number of generations. There is some evidence in the work of Paul and Trask that monkey passage virus acts more broadly in its reactions towards sera in general. For example, in their work they found that, when they conducted neutralization tests with monkey virus, there seemed to be a correlation between the age of the person from whom the serum was taken and the neutralization test, whereas, when they used a human strain in the neutralization experiments, there was a better correlation between the condition of the patient, that is whether the patient had previously had poliomyelitis or had been exposed to the disease, and the ability of his serum to neutralize virus. It is unfortunate that we cannot use the human strain to make studies such as this one that Dr. Harmon has just reported. The results might be somewhat different. They might be more in accord with some of our views.

In discussing the question of the significance of these neutralizing substances, I think we should not lose sight of the fact that there are a great many parallels between the possession of these substances and our general ideas concerning whether the persons or monkeys tested are immune or not. In the case of the monkey these substances appear in the blood only after an attack of the disease or after injections of vaccines. Of course, we all grant that vaccination may not produce solid immunity in the monkey. In that respect, then, the possession of these neutralizing substances does not necessarily mean immunity in that sense of the term. Then we know that there is a passive transfer of these substances from the mother to the infant. There is the general correlation between age and the possession of these substances, and the corresponding parallel between age and immunity to the disease or lack of immunity. And finally, the fact that in rural areas, insofar as the meager data available show, these substances are not acquired as rapidly as they are in urban areas where contact with the virus is probably more widespread.

I think that Dr. Harmon has brought this point out very well: that neutralizing tests have been considered too seriously in the past as being an index of immunity. On the other hand, I think we ought to be very careful not to discard this type of evidence entirely until

we are sure that the possession or absence of these substances does not indicate a certain amount of immunity. Craigie has discussed this problem very thoroughly in a recent issue of the *Canadian Journal of Public Health* and has tried to reconcile, as Dr. Harmon did today, the general ideas of humoral and tissue immunity. He pointed out, from his experiments, that tissue immunity to poliomyelitis apparently does not exist in the monkey. He, therefore, indicates that we must fall back on the humoral theory of immunity or else we have no theory to account for resistance to poliomyelitis.

Dr. Harmon, in closing: There may be a reason why the experimental disease in monkeys is fulminating with a paraplegia involving all extremities, the trunk and neck, with rapid death. The difference may lie in the fact that human poliomyelitis, which is essentially a non-paralytic disease with low fatality, may be conditioned by the presence of these neutralizing substances. Experimental monkeys do not have them unless by artificial contact with the virus. If we extend these observations which we hope to do and I hope others will do, to a large number of cases, it may be that some correlation may be established between the severity of the disease itself and the content of neutralizing substances in the blood.

Dr. Shaughnessy mentioned something about the strains of virus. It is well established that there are human strains and monkey strains. In fact, every one that has tried to pass on the nasopharyngeal virus from man to monkey or tried to adapt the virus from the human cord to the monkey has found that difficult to do. Last summer we thought for a while that we had isolated a non-paralytic virus. We passed it through three successive generations in monkeys but finally lost it. Virus adapted to monkeys from humans, in general, produces very little or no paralysis, so that that may be another reason why human poliomyelitis is unlike monkey poliomyelitis: the characteristic virulence of the particular strain.

There is no other virus disease which, so far as I know, has neutralizing substances in as wide-spread a group of the population as there is against the poliomyelitis virus, except herpes virus and the influenza virus. There is known contact in the instance of those particular viruses, whereas in the case of the poliomyelitis virus such contact is somewhat hypothetical.

Tissue immunity is something to be arrived at indirectly in this disease. So far as I know, there is no direct evidence for the presence of tissue immunity in poliomyelitis. If one could find a measure of this tissue immunity perhaps we would be in a better position to determine some more effective method of vaccination against anterior poliomyelitis.

I should also mention at this time that due to the peculiar pathogenesis of the disease, it is possible now, at least experimentally, to block infection at the nasopharyngeal mucosa. Several chemicals have been found recently, picric acid, mercurochrome, etc., which if dropped into the nares will block infection in experimental animals in about 70 or 80% of cases. Whether this will be directly applicable to the human disease is something to be determined in the future.

A FIVE YEAR REVIEW OF ANTERIOR POLIOMYELITIS IN THE CHICAGO AREA.

SIDNEY O. LEVINSON, M. D.

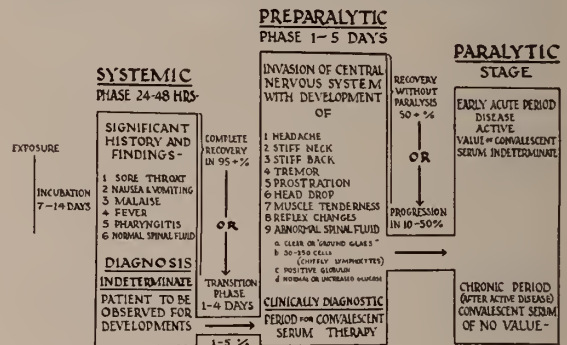
CHICAGO

After five years of observation of acute anterior poliomyelitis in the Chicago area, it is felt that a study of the results might bring out some facts which would be of significance both from the clinical and the therapeutic standpoint.

Despite some isolated reports to the contrary elsewhere, the disease has followed very characteristically the course that has previously been described for this infection. The progress of illness in most cases has shown three fairly distinct phases. (Chart No. 1).

Following exposure (rarely to a known case) and an incubation period variously estimated at

CLINICAL COURSE OF POLIOMYELITIS



one to three weeks, the first stage appears as a general systemic illness of one or two days' duration, simulating an upper respiratory or minor gastrointestinal ailment. It is characterized by fever of 101°-102°, sore throat, mild headache, and, at times, nausea and vomiting. Examination discloses little besides a mildly injected throat, some fever and a slight cervical lymphadenopathy. It has repeatedly been observed that at this time a spinal puncture discloses a normal spinal fluid. It is immediately apparent that at this time and with these findings no one can justifiably make a diagnosis of poliomyelitis. However, it should be added that during the summer or fall months, even in the absence of an epidemic, but particularly so when there is an epidemic, such a minor ailment should not

From the Samuel Deutsch Serum Center, Michael Reese Hospital, Chicago. Read before section on Public Health and Hygiene, Illinois State Medical Society, Springfield, May 19, 1936.

be dismissed without a second thought. Well over 90% of patients recover completely from such minor ailments, which may have no connection with a poliomyelitic infection.

The significance of this first stage is interesting. Almost all patients developing recognizable infantile paralysis give this history of systemic illness. Kramer has shown that the majority of city bred adults are apparently immune to poliomyelitis, although giving no history or evidence of the disease. He has also shown that some individuals have developed an immunity as a result of exposure to the disease, even though they showed no symptoms of infection, or only the indefinite manifestations of the first stage. Trask and Blake were able to demonstrate the presence of virus in contacts who themselves were only mildly ill. Consequently, it is felt that poliomyelitis is far more generalized than was once believed, but that in over 90% of cases, the infection is minimal in severity, sufficient only to produce a minor ailment with some subsequent immunity.

In those cases that do not recover, the second or preparalytic stage follows immediately after the initial illness. Very often there is an interlude, a latent period of one or more days during which the patient apparently is well, before the disease resumes its course. This is known as the "dromedary" form of invasion, and observation should be maintained of the clinically recovered patient for signs of reappearance of the infection. In contrast with the first stage, this second stage is characterized by symptoms and signs indicative of involvement of the central nervous system. The duration of this period is one to four days, although it may be prolonged. There is fever of 101° - 102° , headache of varying severity, irritability, restlessness, apprehensiveness, hyperesthesia, pains in the neck, back and muscles. The patient is usually prostrated. The face is flushed, and there is present a circumoral pallor. The *tache cerebrale* is quite distinct. The pharynx is very often mildly injected and cervical lymphadenopathy is found. The neck and back are resistant to anterior flexion, and attempt to do this produces pain. A head drop is very common. A positive Kernig is frequent, the Brudzinski less common. Tremor of the extremities and muscle tenderness may be present. The muscle power at this stage is normal, but the reflexes, which early are

normal, later are changed, and these changes are highly significant. Loss of the superficial abdominal and cremasteric reflexes are observed early. The deep tendon reflexes, which early may be exaggerated, become diminished and then absent. Such changes in the reflexes, or inequality of corresponding reflexes are very indicative.

It cannot be expected that a case will demonstrate all the signs enumerated. In most instances, however, there will be enough findings so that the physician, on the alert for this disease, will have grounds to suspect its presence. With a history of a mild general illness becoming more severe, progressing, with or without interruption, to a clinical picture such as outlined, and pointing to invasion of the central nervous system, a presumptive diagnosis of acute anterior poliomyelitis can be made. At this stage a spinal puncture should be done and can be expected to confirm the diagnosis. The characteristic spinal fluid is under somewhat increased pressure, clear or "ground glass" in appearance and contains usually 50 to 250 cells. The majority of the cells are mononuclears, but early in the disease there may be a predominance of polynuclears. At times the cell count may be over 1000, while, on the other hand, a number of cases have been observed in which the cell count was normal. The globulin is positive, and sugar normal or slightly increased.

There are certain infections where one will obtain a history, physical and neurological signs, and even occasionally positive spinal fluid findings that resemble this preparalytic stage of anterior poliomyelitis.

In Chart No. 2 are enumerated a total of 65 cases seen in the last two years as suspect cases of poliomyelitis, but in which some condition other than poliomyelitis could be definitely established. These cases presented a clinical picture which led the attending physicians to consider the likelihood of poliomyelitis. Several features are brought out by this chart. The condition most often suspected of poliomyelitis is that of acute encephalitis. There are a large variety of conditions which will give a history or disclose findings suggestive of anterior poliomyelitis, but they can be differentiated by painstaking examination and spinal puncture. The same list of conditions shown in the chart comprises the majority of initial diagnoses made in

those cases that terminate in paralysis; that is, paralytic poliomyelitis before the onset of paralysis is often diagnosed as encephalitis, acute pharyngitis, acute upper respiratory infection, acute rheumatic fever, etc. Little or no thought is given to the diagnosis of poliomyelitis until paralysis supervenes. As can be seen from the chart, in almost all instances, it is no grave mistake to suspect poliomyelitis in the conditions enumerated. The consequences are much more grave, however, when poliomyelitis is overlooked. If the condition sufficiently resembles that of early infantile paralysis and another diagnosis cannot be definitely proved, the patient's illness must be considered and treated as a probable poliomyelitis until the diagnosis is clear.

Until the last two years, all cases that were seen in the preparalytic stage were treated with convalescent serum, administered both intraspinally and intravenously in a minimum total dosage of 80 cc. Although one injection of serum was usually adequate, occasionally a second dose was required. It was found that those patients who required a second administration were usually adolescents, adults, or encephalo-bulbar types. In the last two years, therefore, the dose has been increased, and at the present time our initial minimum dose is 100 cc. in children, and 200 cc. in adolescents, adults, or superior forms of the disease at any age. Patients who are clinically and symptomatically in the preparalytic stage of poliomyelitis, but whose spinal fluid shows no increase in cell count, receive the entire dose of serum, only by the intravenous route.

The preparalytic serum treated series at the present time comprises 149 cases. (Chart 3.) Of this number, 92 showed no evidence of muscle weakness. Forty-one developed a temporary weakness, which cleared up completely within three weeks. Ten cases showed a mild residual weakness, usually of only one muscle group. This degree of weakness was so mild that it could be discovered only by careful muscle examination. Four patients developed a moderate permanent paralysis, none of them of severe degree, and in three of them sufficiently mild that their activities are in no way impaired by the paralysis.

No estimate can be made of incidence or severity of paralysis that would occur unless an

alternate case control group is studied. No comprehensive, alternate case, well controlled study has been made. Mortality rate and degree of paralysis in untreated cases indicates that the endemic disease in the Chicago area is not mild. The development of only moderate paresis in four of 149 treated preparalytic patients is far less than can be expected even in an outbreak of mild poliomyelitis. It is felt that this relatively insignificant rate of paralytic involvement can be attributed only to specific, early, adequate therapy.

If the serum is of value in the treatment of the disease, then it cannot be withheld from any patient who is acutely ill, even though already paralyzed. No benefit can be expected from the use of serum upon the already existing paralysis, but because the disease does not always terminate with the initial paralysis that appears, it is felt that these patients still acutely sick must be given convalescent serum for its possible effect in checking the advance of the disease process. The records from patients treated in the early acute paralytic stage suggest that clinically the disease in most instances seems to have been arrested. However, it is a matter of conjecture and purely one of personal opinion whether the process would not have subsided spontaneously.

The mortality rate in the encephalobulbar patients, who were still acutely sick when first seen and consequently treated with serum, may be of significance. (Chart 4.) It is seen in this group of 50 patients that there was a mortality of 42%. This is a relatively low figure, because experience teaches that superior poliomyelitis is the most fulminating and virulent type and attended by a mortality varying from 60 to 80%.

Since this is human serum that is being administered, the danger of any reaction is almost insignificant. The serum must be warmed to body temperature in a warm water bath, and must be injected slowly. If these precautions are observed, no severe reactions need be expected. There may be some increase in nuchal and spinal rigidity, and a temporary rise of one or two degrees in temperature, but this effect is transient.

The patient is carefully observed, and, if there is evidence that the disease process has not been arrested, a second dose of serum is administered

intravenously. The criteria for determining cessation of active disease are diminution in fever, improvement in the general appearance and degree of prostration, and evidence obtained by another careful muscle and nerve examination that no advance in motor nerve cell damage has occurred.

The general treatment of this disease in the preparalytic stage is like that of any acute infection. In addition, however, orthopedic measures must be instituted promptly. The muscles must be placed in position of physiologic rest. The bed should be firm, the feet kept at right angles, the knees very slightly flexed, the arms in abduction. Very gentle examination may be made periodically to determine the appearance of any weakness so that proper position may be instituted. It has been frequently observed that even a mild paresis of a certain group of muscles may develop. This in itself need cause little concern, because with proper physiotherapy later, it will completely disappear. But during the period that the patient is confined to bed, if these paretic muscles are not properly supported, the antagonist muscles will develop shortening—the paretic muscles will be lengthened and further weakened, and the final effect will be far worse than should be anticipated if the proper steps are taken for rest and support of the involved muscles.

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DISCUSSION

Dr. Julius H. Hess, Chicago: During the past two years many statistical studies on serum therapy of poliomyelitis have been published. After reading these various reports based on accumulated studies of various observers, there arises much difficulty in one's mind in coming to a conclusion as to whether human convalescent serum is of great value. It is a well known fact that the same group of statistics allow of widely different interpretation. In only too many of the reports there has been little citation of results in individual cases or special types and groups of cases. I will, therefore, base my remarks on my personal observations.

Dr. Levinson spoke of the pre-paralytic cases in his group. I have had occasion to see a number of the cases cited in this study and am quite convinced of the good results attributed to the use of convalescent serum therapy in such cases. I wish now to speak of the child who has a more or less extensive paralysis at the time of treatment. We all know that when nerve cells are once destroyed we cannot replace them. The question to be answered in this form of therapy is how much can we accomplish through neutralization of the toxins by the administration of human convalescent serum after evidence of paralysis is present. During

the last year I have treated all cases by giving large doses of serum intravenously, avoiding intra-spinal administration. In coming to a final conclusion as to what we would recommend in practice, it can best be answered by, "What would I do if my own child had infantile paralysis?" Personally, I would administer human convalescent serum intravenously in large amounts. I wish to review three cases that come to my mind as I have been sitting here listening to the last two papers.

The first child, a boy of 14 years, attended Mass on Sunday morning. He stated that he was not feeling well early in the morning, but his folks insisted upon his going to church. Kneeling at Mass he was unable to rise. They assisted him out of the Church and carried him home. This was about noon. The family being in very poor circumstances, did not send for a Doctor until one o'clock on Monday. About 1:30 his physician called me up and told me that he had a case of bulbar polio. I saw the boy at 5 o'clock. When we arrived we found him lying in bed with all four extremities, chest, and abdominal muscles involved. Saliva was running from his mouth and his respirations were short and shallow. It appeared as though he were drowning in his own saliva. I believe Dr. Hoyne will recall this boy. We called the Municipal Contagious Disease Hospital and asked them if they had serum on hand. They answered, "Yes." Upon arrival he was given 60 c.c. intravenously and this was repeated the next morning and a third dose was given, I believe, some 12 hours later. At the end of the quarantine period he was discharged from the hospital. I have seen him since and other than for some muscular weakness, he has made a good recovery.

The second case occurred in a small village near Chicago. I was called by Dr. William Doepp, who had seen the child in consultation with the family physician. The family physician had seen the child three days previously with an upper respiratory tract infection. Being ill himself, he did not see the child again until the fourth day, when he called Dr. Doepp in consultation. By the time the boy reached the hospital, all four extremities were involved and there was a complete absence of abdominal reflexes. This was about two months ago. He came into my office about a week ago and said, "You may not remember me. I am the fellow who was sick with infantile paralysis." He received 300 c.c. of serum intravenously in the course of 36 hours.

The third case gave a history of having been sick eight days and was one of the Landry-ascending type with first an involvement of one leg, then the other, followed by a paralysis of the abdominal and chest muscles and the upper extremities. He had been in and out of the Drinker respirator three or more times that day. He was given 100 c.c. that night and another 100 c.c. the next day and later a third 100 c.c., intravenously. He has since made what appears to be practically a complete recovery. There was some question as to whether this was a case of polio-neuritis type. This sums up pretty much what I think of human convalescent serum. I do not want to leave the impression that serum will restore damaged cells, but I do believe

neutralization of the toxins will save many cells involved but not beyond repair.

I wish to leave the thought with you that we haven't anything better than large doses of serum at present and that when given intravenously as soon as the diagnosis is made or even suspected, many cases will show improvement and in some instances complete recovery.

Dr. Arthur F. Abt, Chicago: I have nothing to add, but I would like to ask a few questions about poliomyelitis.

I notice that in the preparalytic cases Dr. Levinson pointed out there is an increase in globulin and also an increase in the cells. If I remember correctly, Amoss in the New York epidemic in 1916 pointed out that the rise in globulin often preceded by twenty-four hours an increase in the spinal fluid cell count. I thought perhaps Dr. Levinson could tell us more about that. If we have a case of poliomyelitis and only have a globulin rise, we might have to wait twenty-four hours before we get a cell increase.

Then there is the point about differentiating between poliomyelitis and encephalitis. It seems to me clinically that this is often a very difficult procedure. Phillip Rothman, of Los Angeles, several years ago wrote a paper in which he tried to point out that encephalitis was entirely distinct from poliomyelitis. I still believe that it is possible to have poliomyelo-encephalitis. I would like a little discussion on that point.

Nor can we pass this subject without some discussion as to the portal of entry. Coming from Kansas City, I heard a doctor from Cleveland give a wonderful paper on the gastro-intestinal portal of entry. I would not like to see the discussion closed, leaving the impression that the only portal of entry is through the nasal passages.

In support of the intestinal portal of entry, I would like to point out Ayers' work some years ago in an epidemic involving a milk route. There is also an old and ancient work, of which I know, of an early German doctor who followed an epidemic of poliomyelitis on the banks of a river in Germany. It was only the people who drank water from that river who became infected with poliomyelitis.

Then, as a last point, I would like to know about the contagiousness of poliomyelitis. A physician has reported that he himself contracted poliomyelitis and that his children and wife also became ill with the disease. On the other hand, I know of instances where children in the same family slept in the same bed, the one child having the disease in active form and the other child never contracting the illness from his bedmate.

Dr. Levinson, in closing: I have nothing to add to Dr. Hess' discussion, except that our experience in the treatment of paralyzed cases parallels his own. The results of serum treatment in paralyzed cases can only be based on a clinical impression and not on any statistical analysis.

Dr. Abt brought out one fact, which gave me a great deal of concern in 1931. The globulin rise does precede the cellular rise in the spinal fluid. At times there may even be a definite case without any cellular increase, and complete reliance on the laboratory findings

of a cellular increase in the spinal fluid may cause us to overlook and miss a frank case of the disease.

I recall five cases that developed unquestionable poliomyelitis, with no increase in the spinal fluid cell count. So, I think Dr. Abt's point is well taken, that if history and clinical findings point to poliomyelitis, even a normal spinal fluid should not prevent you from considering and treating the case of poliomyelitis.

I find it most difficult to differentiate encephalitis from poliomyelitis. Frankly, when seeing a case in which the immediate differential diagnosis cannot be made, in view of the fact that we have no real therapy for encephalitis, I feel that the patient is entitled to receive serum, because frequently these cases of encephalitis are poliomyelitis. The only harm is the loss of some serum. If the diagnosis is eventually proven wrong, the case is excluded from the series, but no wrong has been done to the patient.

Because the onset of the disease is very frequently a gastrointestinal disturbance, we are not convinced that the only route of entry of the virus is through the nasal passages. All experimental work points to this route, but clinically we cannot yet accept it. It seems logical to expect that, if the virus always entered through the nasal mucosa, in its passage down the spinal column the nerve cells would become progressively affected and a descending paralysis manifested. However, in man the most frequent paralysis occurs in the lower extremities and frequently involves only the lower extremities. Since transmission of the disease has been linked at times with milk and water, it would seem unwise to ignore other routes of entry.

For practical purposes, we may consider the contagiousness of this disease extremely low. It seems to be infectious and widespread, but there are relatively few multiple cases and very few contact cases.

I hoped that someone would discuss the chief evidence against serum therapy. There is not time to discuss the evidence for or against serum from the experimental disease. The clinical argument against serum is based chiefly on Dr. Park's widely known and influential study, which showed that the non-serum treated cases fared as well as the serum treated cases.

I wish to read a comment on the cases composing this study from the New York Academy of Medicine Bulletin. Because this publication is chiefly local, the expression of opinion to be quoted has not had the effect or influence it merits. It appeared in October, 1932, one month following Park's publication:

"Are the treated and untreated groups comparable? In an endeavor to ascertain whether or not the untreated group was a milder group than the treated group, each physician was asked to classify his patients as mild, fairly ill, seriously ill and extremely ill. A statistical analysis of the data based on this grading showed that the untreated group was indeed a much milder group than the treated group. There were also differences in age distribution and other factors which might have influenced the end results."

In consideration of this statement, and the conclusion that the results of the study are inconclusive, and that the members of the committee feel that more accurate and more intensive work should be done along

this line, I think that condemnation of convalescent serum therapy is unjustified. This condemnation was based upon a study wherein the control group consisted of neither alternate nor comparable cases. The obligation rests with those who deny the value of convalescent serum to perform a carefully controlled alternate case study to validate their contention. We, who believe in the value of convalescent serum therapy, cannot assume the responsibility of denying such therapy to any patient.

SUSPECT POLIOMYELITIS—1934-35			
65 CASES			
Diseases	No. Cases	Diseases	No. Cases
Encephalitis	15	Diffuse Myelitis	1
Acute Pharyngitis	7	Post Measles Arthritis.....	1
T. B. Meningitis.....	6	Heat Prostration	1
Acute Upper Respiratory Infection	6	Post Scarlatinal Nephritic Uremia	1
Peripheral Polyneuritis ...	6	Tetanus	1
Acute Enterocolitis.....	4	Septicemia	1
Epidemic Meningitis	4	Acute Sinusitis	1
Pneumonia with Toxic Encephalitis	3	Osteomyelitis	1
Acute Rheumatic Fever... 2		Luetic Meningo Myelitis.. 1	
Post Diphtheritic Paralysis	1	Vaccinal Encephalitis ... 1	
		Diabetic Coma	1

ACUTE ENCEPHALO—BULBAR—POLIOMYELITIS TREATED WITH CONVALESCENT SERUM			
Hours	Recovered Number	Died Number	Mortality Percent
0-24	4	3	43
24-48	17	10	38
48-72	6	6	50
72+	2	2	50
Total.....	29	21	42

PREPARALYTIC PATIENTS TREATED WITH CONVALESCENT SERUM		
Course	Total Number	Percent
No Paralysis	92	61.8
Temporary Paralysis	41	27.5
Permanent Paralysis—Mild	10	6.7
Permanent Paralysis—Moderate	4	2.6
Permanent Paralysis—Severe	0	0.0
Died	2*	1.4
Total.....	149	100.0

*One other patient died of a pneumonia complicating a convalescent nonparalytic poliomyelitis.

FEVER THERAPY OF MYCOSIS FUNGOIDES
Joseph V. Klauder, Philadelphia (*Journal A. M. A.*, Jan. 18, 1936), presents data from which it appears that an acute infection favorably influences the course of mycosis fungoides. Of five cases of this disease treated with inoculation malaria, here reviewed, the results were favorable in four. Malarial therapy apparently does not cure mycosis fungoides; it produces, however, a distinct effect on the disease, an effect greater than treatment ordinarily employed, such as arsenic and roentgen therapy. The future therapy of the disease may be the employment of all these methods. Observations are too incomplete to evaluate the therapeutic efficacy of fever produced by electrical methods. From the evidence presented it appears that fever caused by an infection is superior. If the electrical method of producing fever is

employed it would seem more desirable to combine such therapy with the injections of nonspecific proteins, notably vaccines intravenously, in order more closely to simulate the changes that are caused by a systemic infection. Reference is made to the stimulation of the reticulo-endothelial system by injections of antigenic substances and the role that such a system plays in the defensive mechanism of the body. The concomitant injections of antigenic substances with fever therapy are in accordance with the hypothesis of Jacobsen that the reticulo-endothelial system, when sufficiently active (as when stimulated by one or a number of acute infectious processes), may attain in a measure the ability to cope with neoplastic diseases in a similar if not an identical manner. Malarial inoculation or fever therapy should be given consideration in treatment of other diseases constituting the lymphoblastomas.

RELATIVE GREATNESS	
A Boston teacher asked her class to name the twelve greatest men in the world. One boy wrote:	
The Harvard football team.....	11
Babe Ruth	1
	12

Marriages	
CLARK E. BAKER to Miss Polly Heaton, both of Marion, Ill., in Beaumont, Texas, May 12.	
JOHN PHILIP GRAHAM, Galesburg, Ill., to Miss Eleanor Hegy of San Jose, Calif., in New York, June 13.	
HAROLD SHELOW to Miss Vivian Inez Van Ronkel, both of Chicago, July 8.	

Personals	
Dr. William Allen Pusey was recently elected an honorary member of the Austrian Dermatologic Society.	
Dr. Lawrence F. Isenhardt has been named health officer of Mount Carroll, succeeding Dr. Samuel P. Colehour.	
Dr. George J. Musgrave, Chicago, discussed "Nasal Accessory Sinuses" before the Christian County Medical Society, July 23.	
Dr. Kenneth G. Bulley of the staff of the Wisconsin State Sanatorium, Statesan, Wis., has been named superintendent of Kane County Springbrook Sanatorium, Aurora.	
Dr. M. Herbert Barker, Chicago, addressed the Whiteside County Medical Society, June 25, on "Treatment of Hypertension with Special Reference to the Cyanates."	

At a meeting of the McLean County Medical Society in Bloomington, June 9, Dr. Archibald L. Hoyne, Chicago, discussed "Treatment of Meningococcic Meningitis."

Dr. Paul A. O'Leary, Rochester, Minn., discussed "Modern Treatment of Syphilis" before the Peoria City Medical Society, June 23.

Newly elected officers of the Chicago Society of Internal Medicine are Drs. Walter L. Palmer, president; Andrew C. Ivy, vice-president and Clarence F. G. Brown, secretary.

At a recent meeting of the Chicago Urological Society, the following officers were chosen: Drs. Harvey A. Berkey, president; William J. Baker, vice-president, and Colquitt Otis Ritch, secretary.

Dr. Percival Bailey, professor of surgery and neurology, School of Medicine, Division of Biological Sciences, University of Chicago, gave a lecture in Carmi, July 2, on the history of the Armenian village Zeitouri in Asia Minor.

Dr. Frank S. Needham, Oak Park, won the VanDerslice Cup at the annual golf tournament of the Chicago Medical Society August 12 at Olympia Fields with a gross score of 85. First prize for low net score for officers and councilors went to Dr. Richard F. Greening; for branch presidents and secretaries, Dr. Anders J. Weigen. First low gross score for members was made by Dr. John P. Mulcahy; first low net by Dr. Guy V. Pontius; first high gross by Dr. John J. Gill. About 250 physicians and their friends participated in the tournament.

News Notes

—The quarterly meeting of The Illinois Radiological Society was held in Bloomington, at the Hotel Rogers on Sunday, July 26.

At a film clinic interesting cases were presented by Drs. Halley, Rypins, and Henley.

Dr. P. G. Melnick and Albert Bachum discussed the "Time Factor in the Irradiation of Malignant Tumors" and Dr. A. H. Arneson presented a paper on "Radiation Therapy in the Treatment of Malignant Diseases."

—A special program of lectures and demonstrations in medicine and surgery will be held under the direction of the Mayo Foundation from November 9 to 13, inclusive. Mornings

will be devoted to surgical and medical clinics. In the afternoons and evenings symposiums will be conducted on neurology, gynecology, diseases of the ear, nose and throat, laboratory procedures, emergency treatment, pediatrics, and renal diseases. In addition a clinico-pathologic conference will be held. While this program is arranged primarily for the Fellows of the Foundation, visiting physicians are invited to attend.

—The Illinois Society for the Prevention of Blindness conducted an institute, for public health nurses engaged in school work, on the last day of August and the first three days in September, in the Medical and Dental Arts Building, Chicago.

Lectures were given by Drs. Dewey Katz, Richard C. Gamble, Philip Halper, Thomas D. Allen, and George P. Guibor, Miss Myrtle Chalmers, Mrs. Marjora Garrity of the Board of Education, and Miss Audrey M. Hayden, Director of the Illinois Society for the Prevention of Blindness.

—POSITION AVAILABLE: A fairly remunerative position is available for a statistician capable of some scientific editorial work. Physician preferred. Give qualifications I. M., care of ILLINOIS MEDICAL JOURNAL.

—According to *The Illinois Health Messenger*:

Two cases of Rocky Mountain spotted fever, rare in this area, were discovered in Illinois early in June. One was at Clinton and the other on a farm near Canton. Tests made on blood specimens submitted for examination to the diagnostic laboratories of the State Department of Public Health led to a correct diagnosis in both cases. One patient was a filling station attendant and the other a stock raiser's wife. Both were seriously ill.

The appearance of this disease in Illinois emphasizes the growing importance of modern transportation in the spread of communicable diseases. Faster trains, better highways, high-powered motor vehicles and airplanes make it easier and easier for infected people, animals and insects to be transported great distances.

Rocky Mountain spotted fever, a first cousin of typhus fever, was formerly confined almost exclusively to the cattle raising area of the Rocky Mountains, particularly the Bitter Root Valley of Montana. It is spread to humans from cattle

through the bite of wood ticks and perhaps other insects. It is frequently fatal. During recent years the disease has tended to spread. From 400 to 500 cases with from 75 to 100 deaths are reported annually in the United States. So far the greatest incidence has occurred in the Mountain, Pacific and South Atlantic states. A sprinkling of cases has appeared persistently during recent years in morbidity reports from the Middle West, especially in Iowa and South Dakota.

—The Sangamon County Medical Society held its annual picnic at the Wentworth Club and golf tournament at the Oakcrest Country Club, July 23.

—The University of Illinois this autumn will inaugurate a study of the causes of traffic accidents and the efficacy of methods to reduce the motor toll, the *Chicago Tribune* reports. Students will be required to pass a driver's license examination to obtain a school permit to use an automobile and the cars will have to pass a mechanical test. A detailed record will be kept of all available pertinent information on the 500 automobiles for which student permits are issued. It is hoped to gain information of value to street safety engineers.

—A division of industrial hygiene in the state department of health, Springfield, has been created to study health hazards under which employees work and make recommendations for preventive measures. Headquarters for the new division will be at the University of Illinois College of Medicine, Chicago, with Dr. Milton H. Kronenberg in charge.

—The state health department needs convalescent blood serum to replenish the supply on hand for the treatment of new patients with infantile paralysis. Healthy persons in Springfield and vicinity who have recovered from infantile paralysis during the last ten years and who wish to contribute blood for this purpose will be compensated. Additional information may be obtained from the state health department at Springfield.

—A movement was launched to place anti-rabic serum on the list of free medicines furnished by Cook County, the *Chicago Tribune* reported July 25, as a step in the campaign now being waged against the disease by officials in Chicago and the county. A special campaign will

be carried on against unmuzzled dogs with the adoption of an emergency ordinance permitting the destruction of any dog not claimed within twenty-four hours and a quarantine has been imposed forbidding the transportation of dogs into or out of Cook County. The *Tribune* reported, July 27, that 242 cases of dog bites had been reported within the previous two and one-half days.

—A new two-story building to house the trachoma clinic in Jonesboro was dedicated, July 15, under the auspices of the Union County Board. Speakers included Miss Audrey Hayden, secretary of the Illinois Society for Prevention of Blindness. The building was constructed with materials salvaged from abandoned county buildings; it was financed with WPA funds. Opened in 1934 in the Union County courthouse, the clinic is one of several in southern Illinois where trachoma is prevalent. More than 1,700 positive trachoma patients and 350 suspects attend the five southern clinics, which operate three days each week in Herrin, Harrisburg, Shawneetown, Vienna and Jonesboro, newspapers reported.

—A program of expansion is under way at the Elgin State Hospital, Elgin, which ultimately will involve the expenditure of \$14,000,000 in addition to \$3,000,000 which has already been appropriated from PWA funds. Plans have been approved for a diagnostic center, with a maximum of 200 beds; a tuberculosis pavilion, with 100 beds; infirmaries for male and female patients; a cottage for male patients; a two-story apartment building to house members of the medical staff and their families, interns and residents, and a two-story building for employees, with separate quarters for registered nurses and space for classroom and recreational activities. In the last five years the patient population at Elgin State Hospital has increased from 3,466 to 4,600. During the latter part of 1935, more than 600 patients were transferred to the Manteno State Hospital, Manteno, where a building expansion program has also been under way.

—The tumor clinic of Michael Reese Hospital is sponsoring a graduate course on tumors during the week September 21-27. Morning sessions will be held at the Palmer House and afternoon sessions at the hospital, except those of Wednesday September 23, which will be at the Veter-

ans' Administration Facility, Hines, Ill. Subjects and speakers are as follows: Monday, symposium on cancer of the breast, with Sir George Lenthal Cheate, London; Dr. Henri Coutard, Paris, and Dr. Max Cutler as speakers; Tuesday, intra-oral cancer, Dr. Coutard and Dr. Cutler; Thursday, pelvic tumors, Dr. Coutard and Dr. Cutler; Friday, causes of cancer, Sir G. Lenthal Cheate, and biopsy, Dr. Cutler; Saturday morning, high voltage x-rays, Arthur H. Compton, Ph.D., professor of physics at the University of Chicago; Gioacchino Failla, Ph.D., physicist of Memorial Hospital, New York, and Dr. Coutard. The Wednesday session at Hines Hospital will consist of clinics in which cases of interest from the cancer service of the hospital will be presented. Friday afternoon there will be demonstrations at Michael Reese of radium treatment of cancer of the cervix, insertion of radium needles, construction of radium molds and transillumination of the breast. In the evening there will be a banquet at which Dr. Morris Fishbein, editor of *The Journal*, A. M. A., will be the speaker. Sunday will be devoted to informal round table conferences.

—Dr. Maurice B. Visscher, since 1931 professor of physiology, University of Illinois College of Medicine, has resigned to become head of the department of physiology and physiologic chemistry, University of Minnesota School of Medicine, Minneapolis, effective September 1. His successor at Illinois has not been announced. Dr. Visscher was a member of the teaching faculty at Minnesota from 1922 to 1925, when he took the degree of doctor of philosophy. He received the medical degree at Minnesota in 1931. He was a fellow of the National Research Council at University College, London, 1925-1926, after which he went to the University of Chicago. He served as associate professor of physiology at the University of Tennessee School of Medicine from 1927 to 1929 and of physiology and pharmacology, University of Southern California, 1929 to 1931, when he was appointed at Illinois.

—A lobby window in the Annex Building of Marshall Field and Company has been given to the Chicago Medical Society, free of rental and service charges, for the display of health educational material. The exhibit now on display is a moving, electrically lighted model showing the

circulatory system, lent by the University of Illinois College of Medicine. The background of the window is an allegorical painting representing figures of heart disease, pneumonia, cancer, nephritis and tuberculosis. There is also a card in the window giving the number of deaths from these diseases in Illinois during the first four months of 1936 as reported by the state department of health. The first exhibit, presented early in July, was on eye injuries, especially those caused by Fourth of July accidents. The displays are planned and prepared by the educational committee of the Illinois State Medical Society.

Deaths

WILLIAM ALEXANDER BUCKNER, Chicago; Harvey Medical College, Chicago, 1900! aged 72; died, May 6, of carcinoma of the prostate and lobar pneumonia.

ANNA REBECCA COOPER, Chicago; Cleveland Medical College, 1895; aged 65; died, May 2, in the Provident Hospital, of coronary occlusion and pulmonary infarct.

FRANK MCCOLLUM COX, Chicago; Hering Medical College, Chicago, 1901; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; aged 59; died, May 8, in the Augustana Hospital, of myocarditis.

ALEXANDER L. DAVIDONIS, Chicago; Chicago Medical School, 1922; aged 40; died, May 21, of coronary thrombosis.

LEWIS JOHNSON DAY, Chicago; Chicago College of Medicine and Surgery, 1910; aged 65; died, May 31.

JACOB FRANK, Chicago; University of Buffalo School of Medicine, 1882; past president of the Chicago Medical Society and the Chicago Surgical Society; retired colonel, Illinois National Guard; served during the World War; consulting surgeon to the Grant and Columbus hospitals; formerly surgeon to St. Elizabeth's Hospital; aged 80; died, August 11.

JOSEPH L. KORZEN, Berwyn, Ill.; Chicago College of Medicine and Surgery, 1917; aged 49; died, May 6, of coronary thrombosis.

JAMES McDUGLE, Humboldt, Ill.; Rush Medical College, Chicago, 1877; aged 83; died, May 13, of cerebral hemorrhage.

PAYSON LA VERN NUSBAUM, Chicago; Northwestern University Medical School, Chicago, 1911; fellow of the American College of Surgeons; served during the World War; associate in gynecology at his alma mater; aged 57; on the staff of the Wesley Memorial Hospital, where he died, July 28.

FRANCIS W. WILLARD, Chicago; Marion-Sims College of Medicine, St. Louis, 1891; also a dentist; aged 70; died, May 14, in the Frances E. Willard Hospital, of diabetes mellitus and acute dilatation of the heart.

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DISABILITY EVALUATION PRINCIPLES OF TREATMENT OF COMPENSABLE INJURIES. By Earl D. McBride, M. D. Three hundred seventy-four illustrations. Philadelphia, London, Montreal. J. B. Lippincott Company. 1936. Price \$8.00.

In this volume the author interprets the physiological and mechanical alterations arising out of injuries to the motor structure of the human body, and to reasonably praise and evaluate the extent of functional loss as it relates to the economic incapacity of the injured.

Of late years organized society has assumed the responsibility by providing monetary compensation and social rehabilitation for those injured in industry. Every physician should have up-to-date information on the problem of disability following injuries in order to determine, appraise and evaluate the difference the person as he was before his injury and the variation from normal after recovery. This work supplies the information in a strictly up-to-date manner.

THE EYE AND ITS DISEASES: By 82 International Authorities. Edited by Conrad Berens, M. D., Ophthalmic Surgeon, Pathologist and Director of Research, New York Eye and Ear Infirmary; Special Consulting Ophthalmologist, Woman's Hospital; Consulting Ophthalmologist, Veterans Administration Facility, New York; Lecturer in Ophthalmology, New York Eye and Ear Infirmary; Member of American Board of Ophthalmology; Member of the Society of Surgeons of Paris; Lieutenant-Colonel, M. R. C., U. S. Army. 1254 pages with 436 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$12.00 net.

This book represents an effort on the part of eighty-two international authorities, each an investigator in a special field, to present the essentials of ophthalmology to physicians, surgeons, neurologists, medical students, and those entering upon the practice of ophthalmology.

Throughout the book the needs and interests of the general practitioner has been kept constantly in mind. Advances in ophthalmology are presented in concise form but references to the more important monographs enable the general physicians quickly to locate the sources from which he may obtain more detailed information concerning subjects of especial interest to him.

THE THYROID SURGERY SYNDROMES TREATMENT. By E. P. Sloan, M. D. Edited by members of the Sloan Clinic and with a foreword by William Seaman Bainbridge, M. D. Springfield, Illinois. Baltimore, Maryland. Charles C. Thomas. 1936. Price \$10.00.

This modern work by a master American surgeon covers comprehensively the practical aspects of the goiter problem and thyroid ailments.

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(Continued from page 22)

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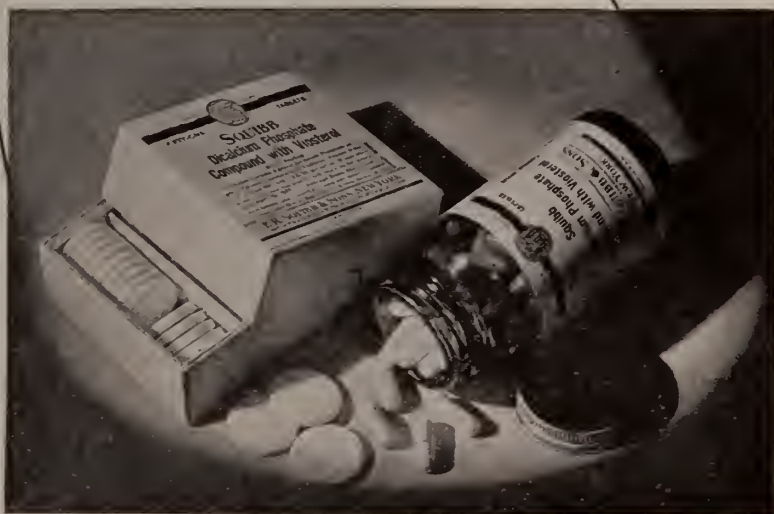
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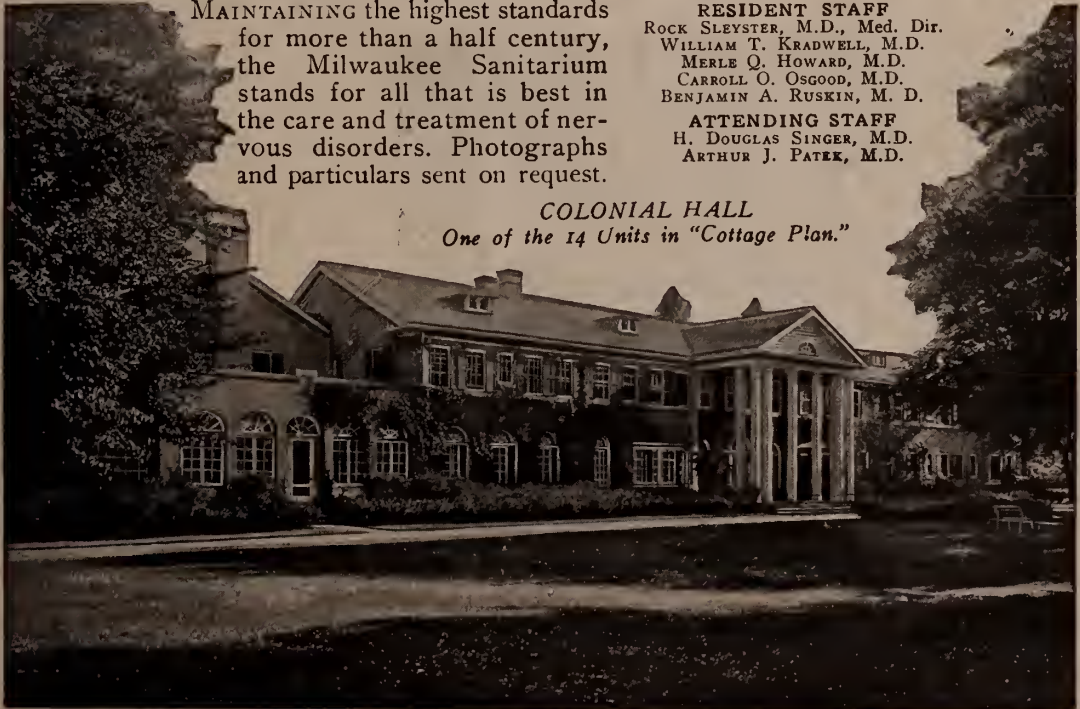
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• The story of vitamin B₁ is quite long and involved. Properly, it has been fully covered at some length in authoritative dissertations on the vitamins (1).

The original vitamin B of Eijkman and of Funk, while definitely possessed of antineuritic potency, is now known to be of a complex nature. Between 1919 and 1926, the vitamin B complex was resolved into vitamins B (B₁) and G (B₂). Subsequent work has indicated the existence of other vitamins in the complex, whose chemical natures or relations to human nutrition are not as yet clearly understood.

As a direct result of many researches on vitamin concentrates, the chemical identity of the crystalline antineuritic factor has recently been described as a derivative of 6-aminopyrimidine (2).

It has been known for many years that vitamin B₁ may be destroyed by heat. In the canning procedure, a number of heat treatments of food may be involved, especially in the thermal "processing" of the product to insure its preservation. In the "process", many foods are subjected to a heat treatment after sealing in the can, to destroy spoilage organisms which may be present on the raw material. In other cases, the food is filled into the cans at a sufficiently high temperature to obtain the same result. Therefore,

the question of the effect of the canning procedures on vitamin B₁ frequently arises.

The times and temperatures necessary for the processing of canned foods are governed by a number of factors, important among them being the pH of the food itself. Highly acid foods require only short heat processes at the temperature of hot or boiling water to destroy spoilage organisms. The so-called "non-acid" or "semi-acid" products require higher temperatures — usually 240° F. (116° C.).

As might be expected, acid foods have been found to suffer only a slight loss of vitamin B during canning (3).

The degree of retention of vitamin B₁ in the non-acid foods is not as high as in the acid foods. (4).

This is partly due to the heat treatments accorded them and possibly also to their low acidity, since the vitamin is more stable in acid media.

The facts in the case may be summarized briefly by the statement that commercially canned foods may be depended upon to supply vitamin B to extents consistent with the amounts of the vitamin originally present in the raw materials from which they were prepared. Because of their widespread use, canned foods contribute a notable amount of vitamin B₁ to the American dietary.

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(1) Vitamins: A Survey of Present Knowledge
Medical Research Council, Special Report
Series, No. 167, 1932. His Majesty's Stationery Office, London

The Vitamins
H. C. Sherman and S. L. Smith
1931 Am. Chem. Soc. Monograph,
2nd Edition

(2) 1935. J. Amer. Chem. Soc. 57, 1751

(3) 1932. Ind. Eng. Chem. 24, 457

(4) 1932. J. Nutrition 5, 307

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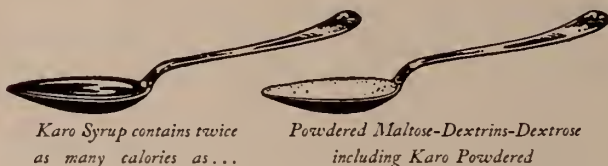
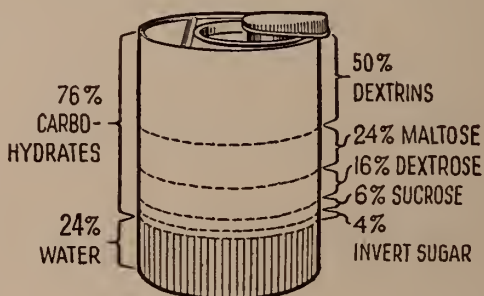
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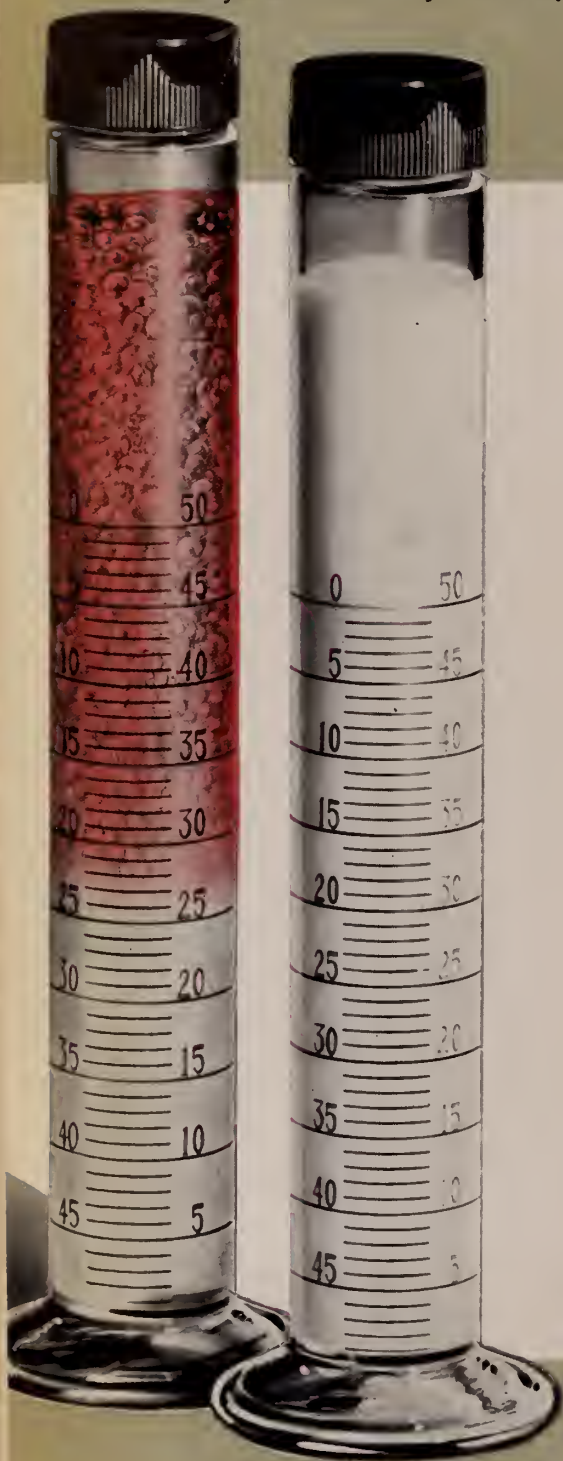
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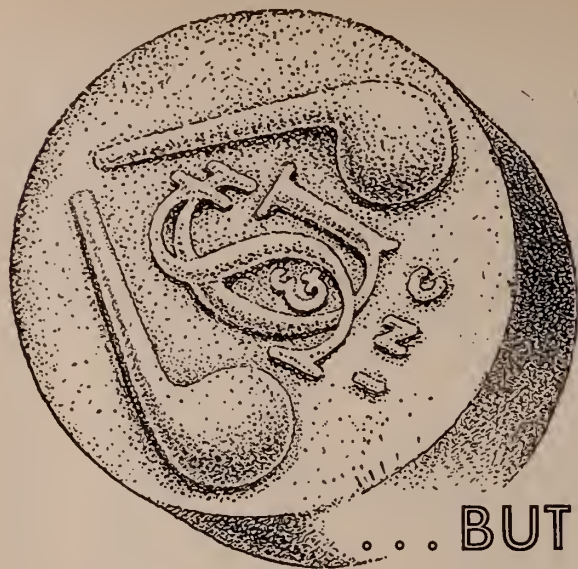
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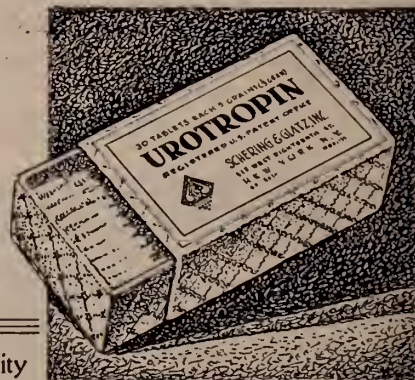
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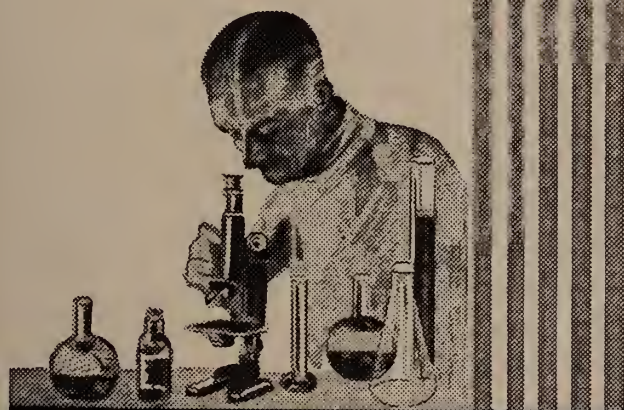
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Editorials

CAUSES OPERATING TO THE DETRIMENT OF MEDICAL STABILITY

Legislation that advocates a bureaucracy to control and dominate the members of the medical profession to the extent that such bureaucracy determines the personnel of a physician's clientele and the fee he may charge regardless of the qualifications obtained and the specially skillful service rendered spells the beginning of the end of scientific medical service for the people.

It is just as unamerican for a bureaucracy to determine a medical clientele as it would be to determine the clientele of a butcher, a baker, or a candlestick maker. There is no difference in the application of the principle.

The physical welfare of our people was never so well taken care of as now. Preventive medicine has made tremendous progress and is the outgrowth of work accomplished by the organized medical profession.

Unfortunately the medical profession is confronted with numerous enemies without and a liberal sprinkling of traitors among its own ranks. A great number of men and women who have been bitten by that fatal parasite, the upliftus putrificiens in the guise of uplifters, are seeking to eliminate the doctor by crushing his individuality, hampering initiative and hoping thereby to accomplish destruction of scientific medical progress, by attempting to divert the practice of medicine into untrained and incompetent hands, which will bring about, as it has done in other countries, the worst imaginable form of medical service.

The wolf at the doctor's door is about to catch by the throat the entire medical profession. Hidden under the cloak of State medicine, compulsory health insurance, national socialization of medicine and sundry other acknowledged offspring of radicalism and cheap politics, only a small percentage of physicians have guessed the evil for what it is.

Those doctors who are awake to the dangers

threatening the profession, realize that unless radical action is accomplished speedily, the doctor will find himself deprived of the privilege of continuing his present occupation.

In recent years the economic status of medicine has been practically turned inside out. *Figuratively speaking the physician has become a civic nonentity. Politicians have arrived at the state where with their business eye they regard a physician as "being in the world but not of it."* Neither politics nor "big business" has hesitated to take advantage of this condition. Considered an "easy mark" to begin with, these interests proceed to make us "the goat" and endeavor to classify us as the cheapest of cheap labor. For years the medical profession has furnished the most servile of hired men for corporations and the great insurance companies. Now the profession is in a fair way to serve them even more servilely as vassals of the state.

As we have repeatedly said in previous years in the columns of this journal three curses are operating to the detriment of the government stability at the present time, they are: autocracy, bureaucracy, and bolshevism. Not centralization of more power at Washington is wanted but decentralization of that now existing there would go a long way to help remedy existing social ills. The present trend towards centralization of power in this country is raising an army of politicians and bureaucrats all of whom must be supported by general taxation of the people.

As a result of increase of bureaucratic dictation Americans are today the most ruled and standardized people in the world, and we are building up armies of citizens to enforce all the laws; by and by we shall all be state and government employees, earning our pay by watching or spying on one another.

The tendency of the age is toward paternalism. Paternalism is doing for the man what he should do for himself. It is the continuation of childhood care for the adult. "Paternalism is the principle or practice of a government or governing bodies that undertakes to supply needs or regulate conduct of the governed in matters affecting them as individuals as well as in their relations with the state or governing bodies and to each other on the assumption that

it can best determine and secure their highest welfare."

The shortsightedness is in the medical profession. The propaganda is seen creeping out in the advocacy of the wholesale treatment of the sick. The germ is in lay dictation as well as in corporation practice and likewise overcentralization of power in the hands of incompetent people who know nothing about medical problems.

Job work in medicine does not get the best results. This is illustrated in government work. The work is done neither as well or as economically as in private practice of business. The weak link in the chain in mass diagnosis and treatment of human ailments is the lack of personal responsibility.

DOCTOR, GO TO THE POLLS AND VOTE ON NOV. 3—TABOO PARTY POLITICS

The bulk of the doctor's woes are economic. Make your choice between the candidate who is wrong both economically and scientifically and the candidate who will right these wrongs. Change unbearable conditions.

Every physician in the State of Illinois must go to the polls and vote on Nov. 3, or else hold himself largely responsible for and absolutely devoid of a right to protest against economic conditions entailing little less than menacing servitude of the medical profession.

Even if a man fails to agree with all the tenets and policies of former President Coolidge, there can be no dissension from Mr. Coolidge's clearly expressed dogma that:

"Every voter ought not merely to vote, but to vote under the inspiration of a high purpose to serve the nation."

The voice of the ballot is almost as loud as the stentorian tones of that good old-fashioned medium, "Spot cash." For spot cash, or ready money, can purchase almost any of the necessities of life, and "necessities of live" savour of the great mirage in the homes of far too large a percentage of practicing physicians today. Either their practice is being taken out of their hands by lay institutions and endowed foundations practicing medicine or, if they have kept even a small remnant of practice, the patients are unable to pay. World-wide as is the depression today, sharp as is the pinch upon the purse of every citizen, the doctor's pocketbook began to get this squeeze acutely at least fifteen years

ago. Despite the danger that was pointed out in the columns of this periodical, despite the diagnosis that the trouble lay rooted in a socialistic infection spread by politics and political contacts, and that the one panacea lay in the ballot box, thousand of physicians disregarded the simple remedy for a raucous ill.

Again the Editor of this JOURNAL asks, aye, even entreats his brothers in medicine to stop, look and listen to where this trend is leading. Economists admit that we are passing through one of the greatest crises in the history of civilization. So far it has been kept chained within the limits of economics, but those who are weather wise are dreading the hour when, if unchecked, the debauch of degeneration shall send its lesions into the very heart of science and of culture. The footprints in the trail are already marked only too plainly in the fields of the fluid sciences of which medicine is at once the sacrifice and the sacrificer.

What every doctor should do and do without hesitation is to discover which men among the hundreds striving to be elected as government of the country are the men who stand for Americanism; who are patriots first and politicians afterwards.

This is the time, as never before, when elections demand not party politics but patriots of the people.

The United States of America founded its Constitution, owes its birth to the principles of liberty, as well as to community justice. It has become the habit with fine phrasers to substitute the word "communist" for "community" and "party" for "patriot."

When the doctors of this country get down to brass tacks and weigh in the balance whether it is better to spend a little thought on politics and less on protest, more on citizenship and less on complaint over spilled milk, the answer will be easy to dozens of problems confronting the doctors today.

Try it during the next fortnight. Find out who is running for office in your town, your county, your state, your country. Discover the attitude of these candidates towards these problems besetting humanity with which the physician must cope every day of his life. Decide upon the man who can best serve the purpose of the ideals of organized, scientific, self-sacrificing medicine, and let your ballot do the rest.

YOU MAY NOT BE INTERESTED IN POLITICS, BUT POLITICS IS INTERESTED IN YOU

In its management of public business politics grips every man's contact with society and with the government. Physicians cannot afford to ignore politics, for politics will not ignore them. The quality of politics depends upon the degree of public interest in it.

Party politics must go under the hammer and go now. Physicians of Illinois must make count their influence for requisite legislation through the results of the next election.

There is no time to waste, elections hang over our heads. November 3 is a day of destiny. The voice of the candidate is heard in the land. So the vote of the physician must be cast for those candidates who will lend an ear to the profession and its dependent, the public health and welfare.

Ballots talk. More effective than all other oratory is the count at the polls. Let the physicians of Illinois show that this gift of electoral eloquence is not denied them by making themselves heard at election day.

The times demand that patriotism supersede partisanship. What alliance each candidate for any office has made with the insidious red propaganda springing up stout as purslane all over the land, each and every doctor should discover without any delay and judge his voting accordingly.

Doctors who think that they can dodge the perhaps tedious, but admittedly necessary task of becoming interested to the point of personal exertion in the government of the United States are mistaken. The rule holds that a man must govern his house or be governed. Apathetic physicians who are willing to submit to the despotism of money-grabbing, wire-pulling politicians may find food for thought and spur to action on November 3 in this quotation:

"There is no escaping politics. It has a bearing on almost every human interest. A doctor may not be 'interested in politics,' but politics is interested in him. In its management of public business it grips every man's contact with society and with the government.

"It is impossible to be born or to die, to marry or to be divorced, without politics having to do with the matter. Every tax you pay, the smooth streets and the good roads, the public schools, the fire department, the health department, the water you drink, asylums, courts, custom houses, jails

and penitentiaries, the police, the post office, every law and ordinance—all spring from government, government springs from parties, and parties are in politics.

"The people can not afford to quit politics, for politics will not quit them. The quality of the politics depends upon the degree of the public's interest in it."

But the people can quit the parties and should quit any party whose candidate does not stand for the people's principles.

What better, plainer plea can be made the physician and at this crucial moment.

Remember election day, November 3.

As a guide to the voting physician let information be given on the following general principles, of interest equally to the medical profession and the general public.

We have too many laws, and too large a tax levy.

Living expense and taxes will be lowered as soon as hundreds of over-priced, interfering, recently adopted and unnecessary laws are done away with. America is mortally ill from a plague of laws and thousands of Bureaus trying to regiment all our industries as well as the life of the private individual. This evil is maintained at an annual cost per capita of \$91, and of about \$350 per family. One out of every five people in the United States who are over sixteen years of age, and who are gainfully employed, is on the public payroll. In the last 70 years this ratio has risen from one out of every 1,000, and in the last 36 years from 1 of every 100.

There are 20 million employees on the public payroll according to the estimates of census statisticians. *This places an "office-holder" or "tax-consumer" on the backs of every two tax-producers.* Exclusive of pensioners there are millions of public servants whose pay comes from the ever increasing taxes. A large proportion of this number is engaged in the administration and execution of superfluous statutes.

A similar situation crushed France and produced the French revolution. It was the bane and damnation of Germany.

"Americans are now compelled by law to do, and prohibited by law from doing, more things than were the citizens of autocratic Europe before the war."

We are the victims of a paternalistic regime that will eventually enslave and bankrupt the

country. The cost of government has become unbearable. Too many functions of local and of state governments are being controlled by hidden bureaus in Washington. *There is more power exercised today in these bureaus by unknown "experts," political appointees of whispering propaganda, than by the courts themselves.*

Centralization of government, bureaucracy, state subsidies and autocratic control are a poignant menace, and a fatal growth.

We have said repeatedly in the columns of the ILLINOIS MEDICAL JOURNAL over a period of a decade or more that:

Bureaucracy is a curse wherever inaugurated. In the management of medical affairs it is fatal. Germany stood at the pinnacle of medical achievement thirty-five years ago. Under bureaucratically administered state medicine, Germany has come to have the worst medical service in the world and the poorest care for the health of the people. It will be ruinous to the health and welfare of the United States if this system is adopted in this country.

Before the coming legislature and convening Congress there will be presented many bills, attempting to regulate incompetently the practice of medicine and needlessly to increase taxation. Many of these bills will provide for the licensing to practice medicine, of uneducated and improperly equipped men and women.

We ask no especial favors for doctors, but we believe in a single standard of education and a thorough professional training before a man or woman can be licensed to practice the healing art or to diagnose disease.

Persons who seek a license to treat human ailment in the State of Illinois should know how to make a diagnosis of disease which is essential for the conservation of the public health.

There should be no side door short cuts to the practice of the treatment of disease in this State.

Don't vote for any man unless you know his attitude towards medical legislation designed to increase taxes and to medical legislation intended to safeguard your health and that of your neighbors and fellow citizens.

**"THE RIGHT TO VOTE IS MORE
THAN A DUTY. IT IS A
PRIVILEGE"**

Where medicine is concerned, it begins to look as if the doctors must either vote for community

rights or else be sunk by communistic wrongs.

Again the job of voting confronts us at the election November 3.

Must the physicians of the land spend even more money, and more time, to discover that neither they nor their profession can compete with practical and practicing politicians? When will they learn the importance of paying more attention to election day—every man with an “M.D.” at the end of his name who calmly sits back now and lets the country be run by those who are not “too busy to bother” with the ballot,

What economic self-preservation the medical profession has been able to achieve has not accrued from any devotion to citizenship duties, but because of the respect in which, even in this topsyturvy day, the average citizen, still holds the medical profession. Of course this same “Mr. Average Citizen” through endowed foundations is only too often trying to practice medicine himself—but even so.

If the doctors of Illinois would attend ever so slightly to their personal citizenship duties—which is a task involving their personal participation in all elections—the result would be a near-panacea for a multitude of civic ills, that are insidiously near to eating at the very core of the essence of civilization.

It is no longer a question of a man’s “getting” or “not getting into politics.” Medical men must cry “Checkmate” to politics. For the politicians of the country have already grabbed hold of the very tail of the medical profession, and are literally swinging this august body of men about with as little ceremony as if it were a yellow dog!

Blinking at facts is useless. The entire trend and achievements of legislation in the past twenty years show how medicine is made the pawn of politics. In another twenty years the medical profession will find itself throttled and altogether ham-strung unless it awakens speedily to the situation. Nor does “waking up” mean that any man can do this deed vicariously. The situation is up to the individual physicians of the land. Every doctor must get to the polling place.

Each doctor must doff his toga of science sufficiently long to discover what is going on be-

fore it goes so far as to give him and his profession, and par consequence, the public health and the virility of civilization—a knock-out blow. Just as soon as physicians enter the actual arena of politics and lend their professional support to those ethical lawyers and clergymen who are accomplishing a brave futility in the effort of getting politicians out of politics, there will be the requisite essential change in conditions for restabilizing foundations of the world’s greatest democracy and even of civilization itself.

Well has it been said that the policies of one set of politicians are in force so long as “fifty and one-tenth per cent. of the votes are cast for those politicians, and the opposite policies are in force when one voter in a thousand changes his mind. It is on such extremely slight changes as these that often hangs success in any political field.”

Even now, hobbled by the almost ubiquitous lethargy with which the average physician regards elections, candidates and the entire system of democratic government—physicians have far more influence than they suspect with members of law-making bodies.

Wide knowledge, good judgment, public spirit and the gift of vision are sine quo non with every successful man of medicine. Physicians everywhere should realize the imminent necessity for their stating to the public as well as to law-makers, not only the ideals of the profession, but the arguments for adoption of these ideals and their absolute bearing upon the health and the wealth of every country. This setting forth of principles should, if indicated, be also a going forth to war for the right—a defense of medical ideals and of the country itself.

Everybody, everywhere may not agree with some of the ideas and dicta of ex-President Coolidge. But every sane minded individual, *anywhere*, must coincide with these assertions of the nation’s chief executive:

“Many of the founders of our government gave all their wealth and their lives for the right of franchise.

“The right of franchise is the right to vote.

“It is the most valuable heritage the American people have.

“The right to vote is more than a privilege.

“It is a duty.

“Our government will continue to give us the

opportunity for independence and freedom only if we do our duty towards the government.

"Our duty is to go to the polls and vote intelligently.

"It is our duty to see that each member of our family, who is qualified, votes.

"It is our duty to know the records of the candidates.

"To some of them you will entrust your liberty and the protection of your property."

Again are the physicians of the country besought to take heed of the electoral situation.

BEFORE ELECTION DON'T FAIL TO CONTACT CANDIDATES FOR OF- FICE BOTH LOCAL AND NATIONAL

Does anybody with even a modicum of knowledge of the average American physicians' character believe they can be cut and squared to the Soviet pattern?

What are the politicians going to do about it? What are they trying to do? It is positively apparent that no small factor in the physician's retaining his independent status will be his active interest in civic affairs. Public welfare demands this his voice be heard. Without further delay interview the candidates for office along the following lines:

"Is the man who is asking for your vote in favor of government medicine, government ownership, government banking, government meddling, government regimentation under a bureaucracy, or for a minimum of government in business, with individual opportunity and freedom from tyrannical rule by government departments and bureaus? Is he for confiscation by taxation, redistribution by demagogues, or for an opportunity for everybody and anybody to accumulate honestly and without special privilege, to work for themselves as well as for the politician and the taxgatherer? Is he for free speech and free criticism of public officials whose acts, in his opinion, call for criticism? These questions are American, not partisan. They must be considered and decided by Democrats and Republicans alike."

Liberty is not worth much if it does not insure economic liberty. Slaves once toiled and died under the flag of freedom; black slaves. Today their place, under the same flag, can be taken by the economic slave.

What will it profit the politicians at Washington who are juggling the destiny of the medical profession and the American people into regimentation and make of us all mere pawns of national government dictation?

Doctors of America, when medicine is involved, are not Republicans or Democrats. They are first doctors with full knowledge of what service to sick people means. They have complete knowledge of what the needs are; they have given much thought and study to the subject of State Medicine. They are thoroughly familiar with what has happened in many countries in Europe where various systems of state medicine have been in operation for years and have finally failed.

Let every doctor in Illinois be represented in public thinking. See the candidates in your district now. That you make contact with candidates and express your opinions on medical problems is of the greatest importance.

It is your obligation to yourself, your profession and the public at large to find out how each candidate stands on issues of great importance to the medical profession as well as to the public welfare.

DOCTORS, DENTISTS AND DRUG- GISTS A FORMIDABLE POLIT- ICAL POWER

There are in round numbers 170,000 physicians, 50,000 dentists and 60,000 drug stores in the United States. In the latter instance there are approximately three druggists for every drug store, making a total of 180,000 druggists. These professions, if properly organized and directed and working cohesively, can be made the greatest factor for good in the country. No legislation inimical to the best interests of the public and the professions named could be placed on the statute books with this organization working coherently. Not a home in the State or Nation that is not reached by some Doctor during the course of the year; perhaps not an individual in the Nation who is not met face to face and engaged in personal conversation by one of the three professions in a given twelve months.

What a power if organized would be the doctors, dentists and druggists of the United States in combating medicinizing socialization schemes, regimentation of the profession, government dictation and practice of medicine, government in

every kind of business and profession, schemes for health centers, clinics, compensation laws, health insurance, Sheppard-Towner Maternity Acts and in heading off Federal interference in medical practice by such menaces as the regrettable maternity bill and the other fifty-seven varieties of attempts to bring about State Medicine.

ACUTE MESENTERIC ADENITIS

Charles Stanley White and J. Lloyd Collins, Washington, D. C. (*Journal A. M. A.*, Sept. 26, 1936), state that they had sixteen cases of acute mesenteric adenitis. There seems to be a seasonal periodicity in their appearance, not unlike an epidemic of a communicable disease. The physical examination shows a slightly distended, tympanic abdomen, generally tender and resistant to pressure. While tenderness is marked in the lower right quadrant it is also present in the lower left quadrant. Examination of the throat and chest has been uniformly negative for gross pathologic changes. The blood counts have shown for the most part moderate leukocytosis (from 8,000 to 14,000) but a high percentage of polymorphonuclear neutrophils (from 80 to 95 per cent). The urine shows neither pus cells nor albumin. With such a history of an illness of forty-eight hours or less in duration, scarcely any other diagnosis than acute appendicitis can be entertained, and the patient forthwith is admitted to a hospital and the appendix is removed without delay. With present knowledge of the fulminant nature of appendicitis, especially in children, any other treatment than surgical seems illogical. At the operation the appendix appears in the rôle of the innocent bystander. There is something decidedly unsatisfying in that (1) the diagnosis was inaccurate, (2) it is very possible the patient would have recovered without operation, (3) the pathologic condition remains unexplained and (4) the error in diagnosis in all probability will be repeated, as no differential diagnosis can be established with the present inadequate data.

PERMANENCE OF CURE FOLLOWING RUPTURED DUODENAL ULCER

Donald Guthrie, Sayre, Pa., and Robert F. Sharer, Chicago (*Journal A. M. A.*, Sept. 26, 1936) state that acute perforated duodenal ulcer is of rare occurrence. The importance of a correct diagnosis and immediate surgical management are stressed, because in no other acute abdominal emergency is the time factor of greater importance. Postmortem examination, which was carried out in every operative case that ended in death, gave no indication that primary gastro-enterostomy or a partial gastrectomy would have made a reduction in the operative mortality. Drainage of the abdomen increases the hazard of bowel obstruction and may well be omitted in the majority of cases less than eight hours old. In this group of patients with simple closure who did not develop obstruction, over 95 per cent of those followed remained well, the perforation perhaps destroying the ulcer site to a degree approaching that of the

cautery. Delayed gastro-enterostomy may be safely performed on those developing obstruction, the great majority remaining symptom free. From a review of the complete autopsies and a nearly complete follow up in this long term series of cases, it would appear that simple closure should be the procedure of choice in the majority of perforated duodenal ulcers.

PHYSIOLOGIC EFFECTS OF CORRECTION OF FAULTY POSTURE

Louis B. Laplace and Jesse T. Nicholson, Philadelphia (*Journal A. M. A.*, Sept. 26, 1936), state that twenty-six subjects having postural defects of the kypholordotic type were studied with respect to the physiologic changes produced by the correction of their faulty posture. The immediate effects were in general entirely comparable to those observed after one year of corrective exercises. In the corrected posture the diaphragm was not always relatively elevated as is generally believed, nor was the heart always more transversely placed. The diaphragmatic excursions were either increased or decreased, for reasons that are discussed. The vital capacity was generally increased, although flexibility of posture was requisite for optimum results. Oxygen consumption was variable. Pulmonary ventilation was generally increased. Circulatory efficiency, as judged by constancy of blood pressure and pulse rate, was generally improved; in two cases the correction of posture was able to prevent hypostatic congestion and syncope. It was concluded that the results of correcting faulty posture differ widely between individuals, irrespective of the grade of the defect. A correct posture appears to be an appreciable advantage to circulatory and respiratory function in the majority of persons, but in some a postural defect may be a compensatory mechanism which it is inadvisable to disturb. The therapeutic application of postural correction should be made according to the requirements of the individual case and only after an attempt to determine in what posture the individual is functionally most efficient.

SLOW CARBON MONOXIDE ASPHYXIA: NEGLECTED CLINICAL PROBLEM

Harvey G. Beck, Baltimore (*Journal A. M. A.*, Sept. 26, 1936), reports on a series of carefully studied cases of slow carbon monoxide asphyxiation. The symptoms exhibited have been correlated with the pathologic lesions produced in experimental animals and found at autopsy. The results establish the fact that slow carbon monoxide asphyxiation (anoxemia) produces a definite clinicopathologic entity despite views held to the contrary. The symptoms arise predominantly from organs rich in blood supply, thus demanding much oxygen, such as the central nervous system and the heart muscles. Owing to doubt and uncertainty as to the actual existence of the malady and a scant literature on the subject, the condition is not generally recognized by the profession and its importance has been underestimated. Since there is no medicinal remedy when the organic changes have once developed, treatment must be directed toward its prevention by proper public health measures.

MEDICAL ECONOMICS

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The impending national and state elections make repetition of previous articles, on the importance of the medical profession showing their interest and influence in the election, permissible. By this we do not mean partisan politics, but rather evidence of our interest in the good of the United States and the future of the profession to which we have dedicated our lives, the medical profession. We can do this in two ways: First, by studying the stand of both the candidates and the parties on the chief problems of the nation as well as the medical profession. A true understanding of their position is difficult in these days when so much is promised and so little performed. We cannot always get a frank statement from the candidates, but usually a little effort and study of promises and performances will tell us how much faith can be given to promises. The other method is to talk with the candidates for office and let them have the opportunity to know what we want as well as to tell us what they purpose to do. This will take a little time, but the influence it will have on the candidates, who after all is said and done are politicians and know that the way to keep in office is to pay attention to the desires of their constituents. This is the last time that you will be requested to take an interest in politics this year, for by the time the next article is in print the election will be over and the opportunity will be lost until the next election.

The lull in the reform propaganda resulting from the nearness of the election should not fool any thinking person. It is just a breathing spell and the time is not being lost by the reformers. They are hard at work with their planning and in the event that the present administration is returned to power, will be ready to start the propaganda mill. The State of New York Medical Society is thoroughly alert to this condition and are ready to oppose the same with publicity favorable to the present method of practicing medicine and opposed to any socialization by ei-

ther state or national governments. This is an alertness and condition of preparedness, which the remainder of the state medical societies may well envy.

The Committee on Medical Economics of the Illinois State Medical Society held a special meeting at the Palmer House in Chicago on September 13 to talk over the problems in Illinois and to outline plans for the coming year. While there was no new problem presented, which was considered of outstanding importance, many of the current problems left from previous years were talked over and definite progress made as to the method to be used in meeting them. Each member of the Committee was assigned a special subject for study, and instructed to be ready to report at the next meeting of the Committee to be held prior to the first of the year.

The subject of Contract Practice received special attention. It was agreed that it was difficult to define the same and to know when contract practice was ethical and when it was not. As this was a subject to which Dr. Reed has given a great amount of time and study, he was requested to prepare a paper on the subject with especial attention to the fundamental aspects of the same and definition of the controversial questions. He has prepared the same and it will be published immediately following this article in the Column. We trust that all of you will read the same and whether you agree with the essayist or not, give some thought to the importance of this subject. So common has Contract practice become that practically all of us are doing some of it in one or more of its various forms. That it is of paramount importance is admitted and it is inevitable that it must be solved by the medical profession in the near future. The proper solution is as much your responsibility and duty as it is that of any man on this committee.

E. S. HAMILTON,
Chairman of
Committee on Medical Economics.

CONTRACT PRACTICE

CHARLES B. REED, M. D.

CHICAGO

The forerunners of the present forms of contract practice appeared in the last half of the 19th century about the time general expansion of scientific knowledge began but were in no way related to this new movement. The inception of this medical adventure is important as a background but the choice of this topic for presentation here was determined largely by its significant growth and by the wide epidemic of approbation which the practice has achieved as well as the scarcity of literature concerning it. Moreover the subject has many complexities and the greater the amount of thought and intelligence which can be directed to it the better it will be understood. In this paper only a brief history of the movement and some discussion of the principles involved will be attempted.

An early variety of this more or less casual innovation was the Mutual Benevolent Hospital Association which was philanthropic in character, liberally endowed and staffed by high class physicians. The avowed purpose of the corporation was to provide its members with medical care at low cost. The idea evolved out of humane sentiments with no conception of an ultimate commercial expansion to a degree where memberships are sold for the benefit of the promoter.

Another kind was developed by railroad, mining and lumbering companies for their workmen who were so far removed from settled districts that no doctor was available for emergencies. The situation was critical in extreme and the companies felt obliged to furnish first aid, primarily because none other was obtainable and next to avoid, or at least minimize, the legal liability for neglect of medical attention as well as to reduce the loss of working hours through accident or disease. Complete medical supervision soon followed and associated with it an attempt was made to determine the health of the worker at time of employment, the existence of occupational incapacity and the sanitary conditions of the working plant.

Out of this small beginning has grown the workman's compensation legislation, divers organizations like the Life Extension Institute, the

vast business and charlatany of occupational disease, over 750 contract enterprises and the recent strong thrust of the Social Theorists toward sickness insurance.

No discussion can be useful without an understanding of the terminology and The Judicial Council has clarified the issue here in declaring that "By the term 'contract practice,' as applied to medicine, is meant the carrying out of an agreement between a physician or group of physicians as principals or agents and a corporation, organization or individual, to furnish partial or full medical services to a group or class of persons for a definite sum, or for a fixed rate per capita."

This definition is broad and comprehensive. It covers a wide diversity of conditions but in it, notably, no reference is made to the ethics of the practice since there are industrial conditions wherein employers are required by law to provide medical care for their workmen, as well as communities which are not large enough to support a competent physician. These differences are too great to be unimportant and too pervasive to be overlooked. Hence before a conclusion can be arrived at on the ethics of such an agreement, the form and terms of the contract must be known as well as the circumstances under which it was drawn up. Even so it is not surprising to find much confusion in opinions for the data are so dissimilar and so personal that coordination of judgment is hardly possible.

Some further definitions may be desirable to elucidate subsequent remarks, thus,

1. *Practice* is the regular pursuit of a profession, such as the habitual application of medical knowledge.
2. *Solicitation* is an invitation for professional patronage by oral, written or printed communications, either directly or by an agent.
3. *Patient* is a person undergoing treatment for an illness, aberration or injury. This last definition may serve to recall an ancient phenomenon of which only vestiges remain at present.

Types of contract and of services rendered will depend in most instances to a large degree upon the honesty and high-mindedness of the men who devise and carry on the project and these qualifications in turn are influenced by the motives which bring the scheme into existence as well as the conditions associated with its execution.

Contract coverage will include on the one hand,

- a. Injuries connected with employment.
- b. Injuries and disease connected with employment.
- c. Injuries and disease not connected with employment.

On the other hand will be found organizations or groups which engage in contract practice, among which are:

- a. Large corporations which operate railroads, mines, oil wells, canneries, manufacturing concerns, lumbering and shipbuilding companies and similar industries.
- b. Mutual benefit associations.
- c. Hospitals and hospital associations.
- d. Medical groups, or individual physicians.
- e. County medical societies.
- f. Trade unions and lodges.

To gain a just appraisal of these several bodies it is necessary to consider briefly the methods whereby some of the principal ones conduct their work. Many large corporations not only employ their own medical men but erect and manage their own hospitals on a more or less elaborate scale. A chief physician is in charge with an adequate salary while the supporting staff usually receives only minimal compensation. The members of the staff may be on whole or part time, or a fee-for-service agreement. The employees are cared for on a monthly payroll deduction basis and to this fund the companies often contribute.

Some Mutual Benefit Associations also follow this plan and maintain a low rate for members only. Yet notwithstanding conditions which largely favor these associations the income from members on low monthly rates is so small that only by endowments from friendly flesh pots and the profits from hospital care to the general public at regular prices are the institutions kept out of bankruptcy.

The so-called Hospital Associations are not appropriately named for as a rule they consist merely of business offices for the persons or firms that have contracts to sell. The contract being obtained the management may even go further and prescribe to physicians the extent of their services in given cases and the compensation to be expected. Such management constitutes the practice of medicine through an intermediary and is distinctly unethical.

In some instances medical combinations of excellent character are doing contract practice under specious names like clinics, bureaus, centers, leagues, etc., and while the service is better probably than that of most hospital associations yet some of these groups loudly assert that they are much dissatisfied with this kind of activity. Their statements may of course be true yet they not only continue their routine work but solicit more. Both experience and theory have shown that nothing is so futile in the absence of restraint as to expect a fixed and unflagging idealism from persons who have something valuable to sell and who would gain something desirable by selling it.

An extraordinary number of these experimental devices have been pushed out here and there since the depression in the hope and expectation of finding an outlet for ethical or, in some cases, non-ethical expansion. Laymen, Social Theorists, and professional altruists also hover about, alert and eager to elbow in and exploit the medical profession to their own ambitious advantage in finance and politics.

In order to meet the growing competition of contract practice a few County Medical Societies, in the state of Washington for instance, have contrived plans to take on contracts as organized bodies. Their purpose primarily was to give the people with low incomes the medical care which their members furnished to regular fee patients but at smaller cost. If incorporated, such societies are themselves violating the legal conditions of medical practice.

To carry out the program ethically the medical societies aimed to eliminate unfair competition among their colleagues and offer free choice of physicians. The execution of the project was found to be extremely difficult and usually unsuccessful. In the first place a business manager, or solicitor was absolutely necessary to carry out the multiple details of operation and secondly it was found impossible for one reason or another to enlist the entire county membership.

Hospitals have had much the same experience and the same drawbacks both ethically and financially. In all the attempts to meet the necessities of low income applicants financial obstacles immediately arose which could not disturb the groups that limited their activities to the payroll class. The prices frequently quoted in these

adventures range from \$1.35 to \$2.50 per month for each subscriber and it must be obvious to any medical man that only the scantiest first aid for minor afflictions could be properly rendered for so paltry a tax. To provide adequate attention at such low cost would result in swift bankruptcy for any conscientious practitioner, or fraternity.

The Mutual Benefit Associations and trade unions have not ventured broadly into contract practice. For the most part they have confined their interest and efforts to the narrower field of protection for the income of their members, which consists usually in employing a physician on a moderate salary to assume the medical responsibility.

The manner of operation and quality of service rendered vary greatly according to the plan selected. Throughout the entire membership of contract bodies a definite fear exists, and justly, lest the medical societies object to, or interfere with their peculiar professional activities. Likewise, there is a craftiness in business dealings and a circumvention of accepted ethics in many contract plans.

"Contract practice per se," says the Judicial Council "is not unethical," and as long as such methods were confined to the field of actual necessity, it created little or no alarm. But, as the exigencies of pioneer projects passed, the emergency skeletons and rules of medical care were not discarded but retained, to become the basis of new and vital schemes to compete with regularly established medical usage. Workmen's compensation laws were passed and funds became available to pay for the medical care of the injured employee. These funds, which assured the payment of fees for hundreds of thousands of potential patients excited the ardor and avidity of the conniving contract cliques. At this point a custom was introduced in contract enterprises by medical men similar to high pressure selling in commercial affairs.

In the medical profession, no ethical person advertises but he who first invokes the aid of publicity, although he becomes unethical and thereby a quack, wins interest and attention at once with very little expenditure. Certain types of contract projects would not be successful if physicians were obliged to wait until business and industry sought them out for their particular utility. Therefore a course of advertising

was adopted to carry the message, at first to organizations having a large number of employees, later to small industries, laundries, garages, business houses, apartment houses and even to individual citizens. The business executive, manager, capper, adjuster, or solicitor thus became the publicity agent of the contract physician, or group. With the incorporation of this element into contract procedures, pressure of getting business became greater, new groups or associations were tempted by the profit motive to enter the contract field, and a definitely unfair competition with private medical practice was created. It was then a short and easy step to underbidding and misrepresentation to get contracts and with these unfortunate changes the operations became flagrantly unethical.

The workmen's compensation legislation has been almost an invariable precursor of general sickness insurance. First in succession comes the attention to occupational disease and then general health insurance and unemployment pensions. In the health insurance systems the free choice of physician is limited, professional confidence is not respected, lay interference and control is a constant menace, inadequacy of fees is habitual and the charges of undue influence on professional testimony by employers or insurance companies on the one hand and by malingerers on the other, are common.

The efficiency of the contract system is also open to question although it is claimed stoutly that the quality of service furnished by these groups is as good as any that can be had. There is much evidence however to show that this is not always true. For instance a leg might be amputated to avoid the expense of a protracted stay in the cooperating hospital while trying to save it. Again patients are sometimes treated at long distance by telephone so frequently that they prefer to pay the family doctor to manage a serious illness, or to operate, rather than the contract representative.

The charge has been made too that some contract doctors give as little attention as possible to their panel patients lest by treating them well they would be encouraged to demand an excessive number of treatments, calls or medicines. In the West Virginia coal field there has been much complaint because the privately owned, profit motive hospitals would habitually provide the least care that would give barely

acceptable results. In other words, the sense of personal responsibility is wholly lost.

Many objections to the contract system come to mind. Some are due to unethical performance and others to dishonesty in operation, restriction in service, or the inefficiency just referred to. Solicitation is almost inevitable in all types of this work and whether it be done by doctors or laymen, it is distinctly unethical.

Exploitation of the medical aid fund by contract doctors for personal profit occasionally happens to the great detriment of the patient and it results usually in a swift breakdown in the financial policy of the organization and in public faith. Workers in industries are convenient groups to inveigle or coerce into wildcat health insurance schemes. For 75 cents to \$2.50 a month, contract doctors agree to render all professional services and care for all sickness with certain limiting safeguards. Such low compensation not only puts a premium on slovenly work but in many cases the—

1. Contract doctor is the insurer.
2. He is not supervised either in his financial resources nor in his execution of contract.
3. He may, or may not maintain a financial reserve.
4. He determines the rate, administers the fund, decides what services shall be rendered and performs them himself or through assistants and retains the unexpended portion of the income. Could any set of circumstances be imagined which would offer more temptations and more security for their gratification to an avaricious management?

Any insurance actuary will testify that the published rates of all these promoters are miserably inadequate for high class service and an unprejudiced physician will give frequent instances of failure of the insurer to fulfill his contract.

The contract itself is not always clear in its coverage and exemptions. Under pressure of competition the solicitor may have misrepresented the facts and the patient suffers from the fraud when he applies for treatment. He is therefore driven by necessity to the family doctor. Moreover most contracts cover industrial workers only. It is claimed that inclusion of persons not on the payroll, or of families, requires too much bookkeeping. Women are protected only if they are on the payroll and chil-

dren never, so that the projects are highly selective from a financial standpoint. Again contract practice is concerned essentially with curative medicine and if a person wishes to keep well by periodic examination he must consult the family doctor, or pay additionally the contract group. Preventive medicine is no part of contract practice. In fact it is wholly disregarded.

Where a doctor or layman, group or corporation contracts to furnish either *hospitalization* or medical care or both for definite periods of time at an agreed rate the contractor is either practicing medicine unethically on the one hand in his own person or he is not practicing but acting as an intermediary between the real practitioner and his patient which is also indefensible and since for success in all these forms of activity a business solicitor is a necessity, the entire system is unethical. The process from its inception is directly contrary to Secs. 2 and 4 Art. VI of the Code. Either it reduces the compensation below the point of adequate service and to an unfair competition with other medical men or it puts the medical service under lay control. This exposes the doctor to the danger of discipline and expulsion from his county society which would deprive both him and his employers of protective insurance and of professional aid in damage cases.

Free choice of physician is often stressed but these plans do not include all the physicians in a community. The so-called free choice is usually limited to the contract holders or their approved associates.

If a man is indisposed to wait for the gradual growth of a practice through his competency or as more often happens he discovers in himself an aversion to impecunious idols, or an avaricious temperament he will find an immediate appeal in contract practice. The effect of such a coalition upon the doctor himself must also be considered. The practice of medicine has always been a peculiarly personal pursuit. It belongs normally to the realm of private initiative and enterprise where competition rather than co-operation is the spur to effort. In consequence when a man enters into contract engagements his whole attitude toward his work is changed. He is bound by the economics of business and his relation to his colleagues and to his patients is conditioned by the new set of rules which his

new obligations require. His personal responsibility for instance is divided among his fellows. Moreover he will see many people daily with definite assurance of pay and therefore cannot have the same feeling toward his patients as the man who depends upon them for good will and support. The doctor has lost the ligament and articulation which should exist between him and his conferee; he has lost the human element. In place of the old intimacy which inspired the patient with confidence the doctor has submerged his professional identity in an organization primarily commercial; a corporation devoted to mechanical methods which in many cases has neither a conscience to guide, a body to kick nor a soul to save.

The public also feels the difference keenly. Contract practice creates a false impression of physicians and of medical service. Not only the financial but the professional relationship is disturbed. The patient and his friends are repelled by the cold impersonality, long distance control, and the cash-in-advance payments which are required. Contract proponents advocate a new high powered variety of medical service characterized by mass production methods and cross cut procedures which benefit the physician, the promoter, or the group rather than the patient, and on account of this pernicious practice of marketing medical service, the loyalty of the patient is destroyed—not only in one doctor but in all medical men and in medicine itself.

The prices charged for contract work imply that other medical fees are unreasonably high but the comparison is not fair since the contract system is an incomplete coverage. If it were not for the advantageous exemptions, the evasion of responsibility and the almost 100 per cent. collection guarantee, the holders of contracts would break down quickly under the economic impracticability.

Contract rates and fixed fees, openly advertised, imply that physicians have a sliding scale of prices. Medical and surgical treatments are indefinite scientific services measured in nature and amount by the necessities of the patient and cannot be compared to commodities sold by units of measure and weight and should not be a matter of bargaining. Moreover the various advertising concerns and institutions which solicit business on a fixed fee for each item of service increase the compensation extravagantly by de-

manding services which are not indicated or even superfluous in the management of the disorder.

After all this exploratory discussion the question naturally arises as to what would constitute, in principle, at least, an ethical contract? An answer to this question is difficult since, as stated previously, contracts differ so widely in form and in the circumstances which they were designed to meet. On the other hand however the stigmata of ethical failure are simple, comprehensive and complete. So simple that it is easy to determine whether a contract is unfair when one or more of the signs is present. Thus, as the Judicial Council explains, Sec. 2 Art. VI of the ethical Code is violated,—

1. Where the compensation received is inadequate as compared with the usual fees paid for similar service in the same community.
2. When the compensation is so low or the conditions of employment so inferior that competent service is impossible of rendition.
3. When physicians secure the contract by underbidding.
4. When, to a reasonable degree, the free choice of physicians is denied to patients who reside in a community where other competent doctors are available. This condition also violates the eighth of the ten principles adopted at Cleveland.
5. When there is direct or indirect solicitation of patients. This is also a violation of Sec. 4, Art. 1, of the Code.
6. Any provision or practical result which is contrary to sound public policy—and
7. Where an intermediary is employed who exploits the doctor.

It must be obvious that the application of these principles to a given case would provide ample machinery for differentiating the ethical from the unethical and the professional from the commercial forms of practice.

The fierce competition for contracts "acquisitions" as they are called, under the contract system has put the heaviest strain on the moral stamina of the doctor. Underbidding for contracts is only too common and when the successful bidder realizes that the financial returns are inadequate to meet the demands of first class work his technic tends to become slovenly.

Organized medicine has no desire to obstruct reasonable and honest efforts to provide the best possible care to all persons whether in the high, or low, income class but the welfare of the patient must always be the first consideration. Contract practice however is so closely allied to purely commercial enterprises that it is difficult

to maintain satisfactory professional standards and in consequence poor service is almost inevitable and for this reason in particular the whole problem has been looked upon with suspicion and dislike by state and national societies.

The ultimate success of any system furthermore must depend upon strict separation of the medical care rendered from the collection and administration of the payments therefor. In addition the certification of cash payments by the doctor must be modified or, better yet, eliminated altogether as the eighth Cleveland principle suggests. The physician should not be required to pass judgment by certificates or otherwise on cash benefits which his patient may receive. The doctor's duty is to secure the patient's return to health at the earliest possible moment.

Contract practice is in reality a kind of insurance benefit and it is essential that a safe and efficient plan for certifying to an incapacity for work should be formulated in any modification of the present system.

"It is pertinent here to ask," says Leland, "if the culmination of centuries of development, research and refinement in Medicine is to result in a mere mechanical manipulation under the control of a few non-medical managers, politicians or Social Theorists, or whether the profession shall evolve its own methods of providing sound scientific services at prices which the people can pay?" The management of this problem is our duty. It should not be left to laymen. If Organized Medicine can contrive and establish a satisfactory quality of medical care under the supervision of its County and State Societies, it will probably be able to control its members and guide them safely through this particular complication.

To recapitulate it may be stated that contract practice has a number of favorable aspects such as (Adapted from Leland Summary),—

1. Had its origin largely in necessity.
2. Has been legalized in some states by statute. (Oregon and Washington.)
3. Under some conditions and relations it is both ethical and legitimate.
4. Has some features that deserve refinement and expansion.
5. Does not in most cases extend its provisions to women and children.
6. Entirely excludes the indigent.
7. Successful operation frequently demands solicitation which is wholly commercial and unfair.
8. In general has become highly commercialized and competitive.
9. Concerns itself almost without exception to curative medicine and does not include preventive measures.
10. Shows no consideration for public or individual welfare.
11. In many instances is characterized by underbidding, sub-letting, mis-representation and racketeering.
12. Is economically unsound in many of its present forms.
13. Is actually a kind of unsupervised and unregulated health insurance.
14. Furnishes medical care which is often inferior in character.
15. Often used by practitioners to influence legislation in behalf of extension of the system.
16. Frequently officered and controlled by laymen who exploit the services of the doctors.
17. Has many features which are unethical and dangerous.
18. In many of its present developments, it lowers the confidence of the patient and of the public in the medical profession both as a body and as individuals.
19. Puts practice on a business basis and overloads the practitioner.

An analysis of this summary would seem to show that probably a majority of contract practice schemes are unethical in conception or unsound in operation or both. They are unsatisfactory to the patient for the most part and more or less distasteful, cumbersome and vexatious to the group except in the financial aspect. It is a phase of medical practice which the profession should scan with continuous and alertly critical attention. As Pusey remarks concerning another evil, "the physicians engaged in such organizations are little more than employees in a technical business. If these projects were numerous in our cities Medicine would lose the greater part of its attractiveness and would cease to call to its ranks the only kind of men it needs, namely—men of high ambitions and altruistic instincts."

Contract practice is a mass production pursuit which is sold to the employers instead of the potential patient and designed to compel the employes under contract coverage to accept medical service selected by a third interest which is usually commercial and sometimes hostile. It is possible of course that the efforts made by doctors to find new opportunities and variations for

On the contrary it is relatively easy to enumerate a considerable variety of activities which are objectionable. Among these may be mentioned,—

1. Is largely limited, by choice, to the payroll class.

the enlargement of their work is a sign of professional vitality but unhappily a careful study of all the claims, beneficial or otherwise, of this particular adventure, would indicate only a furtive and clandestine tendency to accept and develop an unlimited operation of medical commercialism notwithstanding the fact that no sound reason has appeared as yet to justify a relaxation or change in the ancient principles of medical ethics. Furthermore a recognition of commercialism in medicine which is met with indulgence marks the decline of professionalism and the beginning of political domination.

References—Leland, Pusey and Cabot, Judicial Council, A.M.A., 30 North Michigan Avenue.

YOUR RADIO PROGRAMS

Doctors of the state are presenting popular health programs each week for the Educational Committee of the Illinois State Medical Society. These are worthy of your time and attention.

At present time these health talks are given over the following Chicago stations, Eastern Standard Time:

TUESDAYS:

A. M.—WBBM

10:00 A. M.—WJJD

3:15 P. M.—WAAF

P. M.—WGN

THURSDAYS:

10:00 A. M.—WJJD

FRIDAYS:

3:15 P. M.—WAAF

On Tuesdays and Thursdays over WJJD at 10:00 A. M., beginning October 6 and continuing through October 27, there will be a series of talks "A Doctor's Diary" given by a doctor and his secretary, for the Committee. Your comments on the series will be appreciated.

A number of new types of programs are being tried out by the Committee, including some question and answer programs, and others in the form of symposiums by two or three doctors.

During the month of September the Committee was called upon to suggest programs for WLS and NBC, the latter was for a 50 station hook-up.

It is interesting to note that the Educational Committee since its formation, has given more than 3,000 radio broadcasts from Chicago Stations and has never paid one cent to the stations for the time.

The program director of one radio station recently stated that during the eight years the Committee had presened hundreds of health talks over his station, not one single criticism had been received concerning any of them.

JEAN McARTHUR.

WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

As president of the Woman's Auxiliary to the Illinois State Medical Society I extend to you cordial greetings.

In this task that lies before us we are co-workers, dependent upon each other, therefore, it is only fitting that you be acquainted with our plans for 1936-37.

Education of ourselves and others, in matters directly affecting those connected with the medical profession will be stressed throughout the year. Mrs. John A. Wolfer, Chicago, Chairman of Public Relations, has already contacted all County Public Relations Chairmen outlining an excellent program of education for ourselves and others. It is suggested that each auxiliary member contact her local Public Relations Chairman and ascertain how she may assist in this important phase of auxiliary activity. We should become acquainted with health conditions in our county and state, know which phases of health are being stressed and which neglected; we should know the health program and aims of our own Medical Society and that of other organizations, and just how these can best work together to bring desired results. We cannot hope to educate others until we are informed ourselves.

This year being a legislative year in Illinois there will be many opportunities for members to show their interest and lend support to our Legislative Chairman, Mrs. W. D. Chapman, Silvis, Ill., immediate past president of the State Auxiliary. Each County President is urged to appoint an active Legislative Chairman and when the Medical Society furnishes Mrs. Chapman instructions for the auxiliary's definite work in this department, we can swing into useful, active service immediately. When Mrs. Chapman's message goes forth to County Auxiliaries please respond quickly and enthusiastically in the manner requested.

We are not planning any great divergence from the plans of our past president on the matter of Programs but we are hoping to make definite progress toward an educational program for the individual member. Mrs. A. B. Middleton, Pontiac, will send to each County Program Chairman, within a few days, an outline for proposed program, and it is hoped many of these suggestions will be followed out.

It is my earnest hope and expectation that each member will place the auxiliary activities *first* on her calendar and keep our objectives uppermost in mind. Attend your local meetings regularly and endeavor to secure new members by your enthusiastic support of auxiliary objectives. While a member is eligible through her husband it is not the individual doctor she serves but his profession. Through the auxiliary she shares in the activities which advance the aims of the medical profession. Individually our efforts are often lost but from an organized standpoint our influence can be a great force in building in the minds of the laity an appreciation of the medical profession.

Quoting from a National Auxiliary bulletin the question each auxiliary member should ask herself is—"Shall I assist the Medical Profession or shall others charter the work and assume control?"

Mrs. Frank P. Hammond,
Chicago, Ill.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examinations and review of case histories of Group B applicants by the American Board of Obstetrics and Gynecology will be held in the various cities in the United States and Canada on Saturday, November 7, 1936, and on Saturday, March 6, 1937.

The next general examination for all candidates (Groups A and B) will be held in Atlantic City, N. J., on June 8 and 9, 1937.

Application blanks and booklets of information may be obtained from Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania. Applications for these examinations must be filed in the Secretary's office not later than sixty days prior to the scheduled date of examination.

HERNIA INJECTION FILM AVAILABLE

A very interesting 450 ft. of film has been made showing the technique in the injection treatment of hernia.

Any local, state, sectional or national association or any hospital staff having a 16 mm. projection available may borrow this film (without charge) for showing to members. The wide interest in this film makes it advisable that you arrange for your booking early.

Address Farnsworth Labs., 159 N. State St., Chicago, Ill.

THE SIXTY-FIFTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

The American Public Health Association releases the scientific program of its 65th Annual Meeting in New Orleans, October 20-23, with the publication of the September issue of the American Journal of Public Health.

More than 100 separate scientific sessions are listed, engaging upwards of 300 speakers. There are highly specialized programs designed to solve current problems in the fields of administration, nursing, school health work, health education, sanitary engineering, vital statistics, laboratory practice, child hygiene, industrial hygiene, epidemiology. There are programs covering over-lapping interests which involve several groups of specialists who come together in joint meetings for common discussion. There are programs broad enough in scope and of sufficient importance to warrant the attendance of the entire Association in general sessions.

The names of the speakers listed on the programs are familiar to everyone as public health leaders. The Annual Meeting of the American Public Health Association has been known for years as the place to hear the last word on disease prevention and control and health promotion from experts.

On the invitation of the Cuban Government and Florida health authorities, the Association will sponsor an all-expense post-convention tour to Havana via Florida by train, motor and steamer. Delegates are in-

vised to join the tour.

The American Public Health Association offers a copy of the program which includes hotel and railroad information, a summary of the post-convention tour and other details concerning the Annual Meeting to those who write to the Association's office, 50 West 50th Street, New York City.

ANNUAL MEETING OF ILLINOIS STATE SOCIETY OF X-RAY TECHNICIANS

The annual meeting of the Illinois State Technicians will be held at the Hotel Pere Marquette, Peoria, October 24, 1936. The program for the meeting is as follows:

Oct. 24, 1936

LaSalle Room—Hotel Pere Marquette
Morning Session—9 A. M.

Registrations: 10 A. M.

Meeting called to order by the president, Margaret Hoing, R. T.

Address of welcome, Mayor E. N. Woodruff, Peoria, Ill.

Response, Ruth C. Bectz, R. T.

Business Meeting—First Section

President's address.

Appointing committees.

Committee reports.

How May We Make Our Regular Meetings More Useful to the X-Ray Technicians, Esther Perry, R. T., Evanston, Ill.

Discussant, Myrtle L. Jones, R. T., Peoria, Ill.

Demonstration of Positions in Radiography, Helen Luksik, R. T., Chicago, Ill.

The History and Technical Aspects of Kymoroentgenography, L. C. Neidner, St. Louis, Mo.

General Discussion.

12:00

Luncheon

LaSalle Room—Hotel Pere Marquette

Presiding, Maude Krupp, Bloomington, Ill.

Speaker, G. W. Chessman, Pastor First Baptist Church, Peoria, Ill.

1:30 P. M.

Afternoon Session

Angulation in Dental Radiography, Ott Krog, Rochester, N. Y.

Discussant.

Radiography of the Optic Canal and Petrous Pyramids, Cesare Gianturco, M. D., Urbana, Ill.

Discussant.

The Elimination of Faulty Chemistry and Processing H. A. Tuttle, R. T., Chicago, Ill.

Discussant.

The Technical Requirements of Chest Radiography, Roswell T. Pettit, M. D., Ottawa, Ill.

Chest Radiography, Edmund P. Halley, M. D., Decatur, Ill.

Discussant, Eleanor T. Mitchell, R. T., Oak Forest, Ill.

Anterior-Posterior Projection of Fifth Lumbar Vertebra, Harold G. Petsing, Chicago, Ill.

Discussant, Ralph R. Tarrant, R. T., Iowa City, Ia.

The Teaching of Anatomy by Radiography of the Cadaver, H. O. Mahoney, Chicago, Ill.

General Discussion.

The Registry as an Incorporate Body, George M. Landau, M. D., Chicago, Ill.

Discussant, Fauntleroy Flinn, M. D., Decatur, Ill.

Business Meeting—Last Section

Report of Committees.

Installation of New Officers.

Appointment of Committees for Coming Year.

Adjournment.

7:30 P. M.

La Salle Room, Pere Marquette Hotel

Annual Banquet

Toastmaster, Dr. F. S. O'Hara, Springfield, Ill.

Speaker, Dr. Ralph Willy, President Chicago Roentgen Society.

Speaker, Dr. Wm. M. Hartman, Macomb, Ill.

Speaker, Dr. H. K. Campbell, Springfield, Ill.

Entertainment

For further or detailed information, write Dr. Gentz Perry, 636 Church St., Evanston, Illinois.

THE CONSTITUTION

Our government functions in a tripartite manner—that is, through the legislature, the executive and the judiciary. So nicely balanced are these departments that one can not encroach upon the activities of the other without throwing the entire nation out of harmonious operation.

Without in anywise commenting upon the status *praesens*, the average voter November next will vote for his choice of president with scant or no thought as to who shall represent him in the National Congress. Somehow he feels that his president will take care of his every need. In other words, he makes the president a dictator—controlling the congress. Some go so far as to believe he ought to control the judiciary—the supreme court.

If we have a civilization worth while, it has developed within the metes and bounds of the constitution. Men of all nations have quitted their native country and have voluntarily lived under its beneficial rule. Perfect? No, it is not perfect. It is a human document inspired by Him whose superscription upon our coin reads *In God We Trust*.

Hasten the day when our Congress will be filled with our ablest men who will make laws for our welfare.

Hasten the day when our president will meet in Washington senators and representatives whose ability he respects.

Restore the day when all of us shall hold as a precious part of our heritage the sanctity of our supreme court.

—Madison County Doctor.

REQUEST FOR DATA BY BUREAU OF HUMAN HEREDITY

The object of this Bureau is collection on as wide a scale as possible of material dealing with human Genetics. Later, the tasks of analysis of material and distribution of the information available will be added.

The Bureau is directed by a Council representing medical and scientific bodies in Great Britain. "It is affiliated to the International Human Heredity Committee, which ensures co-operation in all areas where research is proceeding.

The Council would be grateful to receive all available material from Institutions and individuals, furnishing well authenticated data on the transmission of human traits whatever these may be. Pedigrees are particularly desired; twin studies and statistical researches are also relevant. As research workers and others who send in material may in some cases wish to retain the sole right of publication (or copyright) those who so desire are asked to accompany their material with a statement to that effect.

Material should be given with all available details in regard to source, diagnostic symptoms and the name and address of the person or persons who vouch for accuracy. All such details will be regarded as strictly confidential.

Reprints of published work would be most acceptable. Further, many authors when publishing material may also have collected a number of pedigrees which they have been unable to reproduce in detail. It is the object of the Council that such records, by being included in the Clearing House, should not be lost.

Those wishing for a copy of the Standard International Pedigree Symbols may obtain one from the office.

Announcements in regard to the services undertaken by the Bureau will be published from time to time.

Forward Data to 115, Gower St., London, W.C.1., England.

Executive Committee: R. A. Fisher, J. B. S. Haldane, E. A. Cockayne, J. A. Fraser Roberts, L. E. Halsey (Hon. Treasurer), C. B. S. Hodson (Hon. Gen. Secretary).

BLOOD PRESSURE, HOT DOGS AND MERRY-GO-ROUNDS

The old-fashioned medicine man is slowly disappearing from the sideshows and county fairs but today a new charlatan is taking his place at beach resorts, fairs and amusement parks. Equipped with a white coat, a stethoscope and a bloodpressure instrument, these operators are capitalizing on the public's interest in bloodpressure. Their main concern is collecting the ten or fifteen cents they charge per "patient."

It is evident that bloodpressure readings taken by such persons under such circumstances are of no value. The "patient" is simply being bilked but the most harmful part of this practice is the serious consequences that may easily result in some cases regardless of whether the information is erroneous or otherwise.

We are vigorously opposed to this misuse of medico-scientific instruments, having gone on record with the American Medical Association to this effect a year ago. Moreover, we have refused to fill large orders for Baumanometers to be used for such purposes.

This evil practice should be stopped and we would appreciate your co-operation in reporting to us any

instance that comes to your attention—especially where some definite harm has resulted to a patient.

W. A. Baum Co., Inc., 460 West 34th Street, New York. Since 1916. Originators and Makers of Blood-pressure Apparatus Exclusively.

MAGGOT STUDY YIELDS NEW FACTS ON UREA

Digging deeper into the recent mystery of how blowfly maggots stimulate healing in stubborn wounds, a fact observed by surgeons during the World War, Dr. William Robinson of the U. S. Department of Agriculture now announces the possibility that urea, a well-known and widely distributed chemical, may be responsible along with allantoin for this remarkable healing produced by maggots.

In an article appearing in the August number of the American Journal of Surgery, Doctor Robinson cites case histories provided by physicians, surgeons and dentists, who have used urea solution in the treatment of osteomyelitis, gangrene, old ulcers, stubborn wounds, infected burns and non-healing gums and tooth sockets. The reports are encouraging. If borne out by subsequent clinical tests, Doctor Robinson's discovery will be of great importance to the medical profession.

These physicians and many others became interested in the use of urea through a previous interest in allantoin, which in fifteen months has come into extensive manufacture and wide use from the starting point of an obscure and practically unused chemical.

Urea is present in the tissues and blood of animals and humans and is of common occurrence in plants, including many used as food, such, for example, as spinach. However, it got its name from the fact that it was first found in urine, in which form the excess nitrogen is removed from the body. Urea is of great historic interest since it was the first organic chemical ever to be made synthetically. That epoch-making discovery was made more than 100 years ago.

Urea is an almost snowlike, crystalline chemical, and under the microscope a pinch of it looks like a miniature log jam of sparkling stocks of ice. Chemists now make it by the ton by combining three gases which occur in air or water—nitrogen, hydrogen and carbon dioxide.

In the treatment of wounds, urea has been used mostly as a two percent solution, but, unlike allantoin, it is highly soluble and heavy solutions may be made. Pure urea, much used by doctors as a diuretic, sells for only a small fraction of the price of allantoin.

Attention was called to the healing possibilities of urea not only because it was associated with allantoin in maggot excretions, but also because the chemical "picture" of allantoin shows how easily its "side chain" might be "chipped" off by hydrolysis to form urea. It has been suggested that this "chipping" may occur when allantoin is used in wounds, leaving urea as an active agent in healing.

ACADEMY OF PHYSICAL MEDICINE

The Academy of Physical Medicine will hold its Annual Meeting in Boston, Massachusetts, at the Hotel Statler on October 20, 21 and 22, 1936.

The program is educational in character and contains symposia and reports on the newer studies and clinical developments in Physical Medicine presented by recognized authorities in the various fields of medicine and basic sciences.

An informal dinner at the Ring Sanatorium is scheduled for Tuesday evening, October 20. The Annual Academy Banquet will take place on Wednesday evening, October 21, at the Hotel Statler.

An elaborate program has been arranged for the visiting ladies.

All members of the medical profession are cordially invited to attend. A program will be mailed on request. William D. McFee, M. D., Chairman Executive Committee, 41 Bay State Road, Boston, Mass. Franklin P. Lowry, M. D., Secretary-Treasurer, 313 Washington St., Newton, Mass.

RESOLUTION RECOMMENDING THE APPROPRIATION OF ADEQUATE FUNDS FOR THE MAINTENANCE AND GROWTH OF THE ARMY MEDICAL LIBRARY'S BOOK COLLECTION AND INDEX-CATALOGUE

The Medical Library Association, comprising two hundred of the medical libraries of the United States and Canada, assembled in its thirty-eighth annual session in St. Paul, June 22, 1936, notes with pleasure and pride the appearance of volume one of the Fourth Series of the *Index-catalogue* of the Library of the Surgeon-General's Office, United States Army (Army Medical Library). The Association records with satisfaction the abbreviations and changes in composition in this new volume effecting a saving of twenty per cent in space with accompanying reduction in cost.

After a delay of three years during which no volumes of this *Catalogue* were printed, the appearance of this first volume of the Fourth Series gives renewed assurance of the continuation of this publication, which, together with the Army Medical Library, is considered the outstanding contribution which our country and its Government have made to medical knowledge, and

WHEREAS, The value and usefulness of the *Index-catalogue* is dependent upon the completeness of the files of medical publications contained in the Library of the Surgeon-General's Office—a public, national, medical library, the greatest in the world, serving in its present form of administration with satisfaction the medical profession and the medical libraries of our country, and

WHEREAS, In recent years the annual appropriation of the Congress has been wholly inadequate to provide sufficient funds to acquire the current medical books and periodicals issued throughout the world, so that they might be available for use throughout the country and for inclusion in the *Index-catalogue*.

Therefore Be It Resolved, That the Medical Library Association urges the Congress to appropriate annually to the Library of the Surgeon-General's Office an adequate sum for current medical books and periodicals and for the purchase of back publications lost during those recent years when the amount granted was grossly inadequate, thus depreciating the completeness and usefulness of the Library's collection; and an additional

sufficient sum annually, for as many years as may be required, in order to make for the greatest possible completeness of the collection and its *Catalogue*; and

Be It Further Resolved, That a sum be appropriated annually to defray the cost of printing regularly each year not less than one volume of the *Index-catalogue*, and

Be It Further Resolved, That a copy of these resolutions be spread upon the minutes of the annual meeting of this Association and sent to the President of the United States, the presiding officer of both houses of Congress, the Secretary of War, the Surgeon-General of the Army, and to the national, state, and other medical periodicals with a request for publication, and to the members of this Association, urging the organization of which they are a part and all other medical associations and institutions to adopt similar resolutions to be sent to their local members of Congress requesting their support of these measures.

A POLITICAL PRESCRIPTION FOR DOCTORS

Competent political observers predict that a heavier vote will be cast at the national election in November than ever before. They are forecasting also that a substantial shift will take place in party representation at Washington. Opinion is almost unanimous that the middle West will be the principal battle ground of the political conflict. A few profound thinkers believe that the control over the national government is destined ultimately to repose permanently in the middle West because the population in that region control a greater volume of actual and potential wealth than the inhabitants of any other part of the country.

Politicians are not ignorant of these shifting scenes. Hungry always for a square meal of popular opinion they are eager to grasp even the crumbs of information that point toward any significant change in public thought with respect to government and legislation. They have detected and publicly recognized a more conservative attitude, particularly concerning the curtailment of production and vast expenditures. They know that radical legislation appeals less to the people now than it did three or four years ago.

The ears of every politician are still tuned to the voice of the voters in his home district, however. He believes that important changes in the governmental functions to meet the requirements of the new order are bound to come and he is anxious to know what his constituents want in this respect. He is a superlative listener, the

best in the world, and he wants to go to the legislature or to congress on a platform that will make his tenure permanent.

This situation puts the medical profession into a particularly advantageous position with respect to exercising an influence on the trend of legislation. Voting on election day is not much more than the ring of the bell or its silence that proclaims whether or not the bullet hit the bull's eye. Expressing your views, especially on medical problems, to the candidates is the power that drives the bullet home. The high standing enjoyed by physicians in their communities gives weight to their opinion. By direct and indirect contact with candidates for office, physicians can let it be known where they stand on questions of legislative importance and in that way become a potent factor not only in moulding public opinion but in the construction of new laws.

The exercise of political franchise in the effective manner suggested was never more important to physicians than at this moment. Although the trend is now away from radical legislation, political thought is still in a state of flux. Such matters as compulsory health insurance, the regimentation of doctors and granting to corporations the privilege of medical practice, to say nothing of antivivisection and lowering the standards of medical practice are merely quiescent and by no means settled. Tax problems are far from being a closed account. Social security with all its implications has been solemnly promised to the public by all responsible candidates. The course toward the solution of these issues remains to be decided. Here the physician has a stake. He has an opportunity, a privilege and a duty.

Now is the time for the doctor to use his influence. Bemoaning the curse of injudicious laws and damning politicians after statutes have been written is a clumsy, expensive way to correct evils that need never be born. Some vigorous birth control procedures applied to the fertile soil where legislation breeds in the minds of candidates before election is the soundest and best prescription against undesirable laws.

Your Legislative Committee wishes to urge upon you the duty and responsibility that is yours in respect to political matters. How or for whom you vote is relatively unimportant so far as party alignment is concerned. Your polit-

ical faith, so far as parties are concerned, is a matter of indifference to your Committee. That you make contact with candidates and express your opinions on medical problems is of the greatest importance, however.

Illinois will be in the very center of the national political battle ground. This state will undoubtedly become a greater factor in moulding political opinion as time goes on. How the physicians here express themselves will have no secondary importance on the thought of the medical profession throughout the country. This has been the experience of the past and less may not be anticipated in the future.

Political doctors may be second rate physicians but the ablest physicians can and ought to doctor politics. Now is the time to do a bit of doctoring when it will count the most.

JOHN R. NEAL, M. D.,
Chairman, Legislative Committee.

PICRIC ACID—SODIUM ALUM SOLUTION RECOMMENDED A POLIOMYELITIS PREVENTIVE

To The Medical Profession of Illinois:

The unusually heavy prevalence of poliomyelitis in Illinois at this writing and the possibility that several hundred new cases will develop before the epidemic wave subsides, makes imperative the employment of every practicable means available for controlling the disease. Experimental work done in the National Institute of Health of the U. S. Public Health Service and elsewhere indicates that a nasal spray of picric acid and sodium alum may prevent poliomyelitis if applied prior to infection, although the preventive value of such a solution has not been proved among human beings and may not be effective in all cases. This preparation gave complete protection, however, to 20 monkeys that were sprayed and subsequently inoculated with poliomyelitis virus, while 16 out of 20 unsprayed control monkeys got the disease after inoculation.

The formula and method of using the solution recommended by Armstrong and Harrison, who conducted the experiments for the United States Public Health Service are as follows:

FORMULA

Solution A—Dissolve 1 gram of sodium alum (sodium aluminum sulphate C.P.) in 100 cc

of physiological salt solution (0.85 percent). Turbidity may be removed by filtering one or more times through the same filter paper of Berkefeld filter.

Solution B—Dissolve 1 gram of picric acid (C.P.) in 100 cc of physiological salt solution (0.85 percent). (Warming will facilitate solution.)

Mix equal amounts of solutions A and B. This gives a 0.5 percent solution of each ingredient, which is stable, and it is this mixture which is to be dispensed.

On the appearance of cases of poliomyelitis in the community, spray the nose thoroughly once daily on alternate days for 3 or 4 applications, then once weekly thereafter for the duration of the poliomyelitis season. The spray should be directed upward toward the top of the head.

Upwards of 215 cases of poliomyelitis were reported in Illinois during September, the highest monthly incidence since 1917. While Cook and Winnebago counties have suffered more severely than any other localities, cases have been reported from 38 counties during the last six weeks. If prevalence runs a course similar to that in all previous years, at least 200 cases will occur during October and from 300 to 400 cases before the end of the year.

Under these circumstances I have no choice but to suggest as a possible preventive against poliomyelitis the picric acid sodium alum solution described above. While an accurate appraisal of the prophylactic value of this preparation, when used in people, will be difficult if not impossible, it undoubtedly prevents poliomyelitis in animals under experimental conditions and warrants at least a trial in general practice.

Very truly yours,

FRANK J. JIRKA, M. D.,
Director State Department of Public Health.

CONSERVATIVE TREATMENT FOR HABITUAL DISLOCATIONS OF SHOULDER

Arthur G. Davis, Erie, Pa. (Journal A. M. A., Sept. 26, 1936), states that (1) the treatment outlined has eliminated the necessity of operative measures in 75 percent of a consecutive series of typical recurrent dislocations; (2) the patient is only somewhat disabled during a short period of treatment, and (3) the evidence submitted suggests that this short period of treatment yields results of a permanent kind and therefore offers an alternative to operative approach.

Original Articles

INJURIES TO THE ESOPHAGUS

CHARLES D. SNELLER, M. D.

PEORIA, ILL.

Injuries to the esophagus vary from simple abrasion to total perforation. They may be caused by instrumentation, by the accidental passage of foreign bodies through the normal esophageal orifice, by bullets and penetrating bodies passing from the outside into the esophagus, or by the accidental swallowing of substances called food or included in the food.

This paper is based upon the records of 100 consecutive, unselected esophageal cases from the writer's private practice. The considerations will necessarily be general because, in such a cross-section of this phase of oto-laryngological practice, a full and careful study would require more space than is allotted.

Anatomy. The esophagus is an elastic, flexible, almost completely collapsed tube extending from the hypopharynx to the cardiac end of the stomach. It is lined by stratified epithelium, arranged in longitudinal folds and pierced, at the cardia and in two small lateral areas in the upper esophagus, by a few superficial glands, and throughout its length by the orifices of some 200 or more true esophageal glands. Immediately beneath the epithelium is the thin tunica propria resting upon the longitudinally arranged muscularis mucosa.

Beneath the muscularis mucosa lies the looser areolar connective tissue which unites the true muscular layers with the mucosa. In this submucous coat lie the lymphatic and venous plexus, the submucous or Meissner's sympathetic plexus and the true, deep esophageal glands. Beneath the submucosa is the thick circular muscular coat arranged in bundles. Between this and the external or longitudinal muscle layer is a narrow loose connective-tissue septum in which lie the larger blood vessels and the outer sympathetic nerve plexus of Auerbach. Outside this longitudinal layer of muscle is the loose fibrous adventitia containing the largest lymph and blood vessels and the branches of the vagus nerve which supply the three esophageal layers.

The true or deep *esophageal glands* of the submucosa are arranged in groups, longitudinal to the long axis of the esophagus. They are usually about one millimeter in length and have one secretory duct with a dilated collecting chamber. The duct usually empties towards the cardia though some may empty towards the larynx. These ducts and dilated collecting chambers may at times be the points of entry of small foreign bodies and of bacteria. These glands, controlled by the vagus and more abundant in the upper half of the esophagus, secrete a special mucus different from any other in the alimentary canal. Though this secretion is thought not to have enzyme action, it is due to its diffuse covering of the entire mucosa and to its alkaline and other characteristics, that it is the greatest barrier to the absorption of toxic products and bacteria. It is only when this mucoid covering is removed or the mucosa is penetrated, that bacteria or acid gastric juices can affect the esophagus.

It may be of interest to mention here the experiments of Friedenwald and others (1928) in which they produced small abrasions in the esophagus of dogs through the esophagoscope. They observed that these lesions healed rapidly under usual conditions and that healing was delayed or the lesions ulcerated when HCl was given to the dogs in their diet. They also took deep bites into the deeper esophageal structures and found that feeding HCl markedly retarded healing, or ulcers were made to perforate. Similar deleterious effects may occur in man when vomiting of gastric juices takes place in the presence of esophageal lesions.

The *arterial* supply of the esophagus varies much in different parts. The cervical is richly supplied by the inferior thyroid and an occasional branch from the subclavian artery. The thoracic portion is variably supplied by anterior and posterior branches of the esophagotracheal arteries and by branches of the intercostals and the aorta. The right wall of the lower thoracic portion has the poorest supply. The abdominal portion is less well supplied by the gastric, inferior phrenic arteries and branches from the aorta.

The esophageal *veins* form a submucous and a periesophageal plexus. The upper portion drains into the inferior thyroid vein and superior vena cava and the lower portion into the azygos and

Read before Section on Eye, Ear, Nose and Throat, Eighty-sixth Annual Meeting, Illinois State Medical Society, Springfield, May 19, 1936.

intercostal veins. Kegaries and others state that the normal veins in the submucosa often assume sinus-like dimensions and are therefore vulnerable to hemorrhage in various conditions such as passive congestion of the portal system, etc., and in injuries and ulcerations of the esophagus.

The *lymphatic* system (Jackson, C. M.) is arranged in a mucosal and a submucosal plexus. These drain by three groups of collecting vessels into deep cervical glands, into the bronchial and posterior mediastinal glands and below into the gastric nodes. As in infections of the nose and throat, various cervical glands swell and become tender, so likewise, in infections secondary to injuries to the esophagus, the deep cervicals, the bronchial or mediastinal or the gastric nodes may swell and become tender. Therefore this may be the explanation of various symptoms presented by patients with injuries and infections of the esophagus.

The *sympathetic* nerve supply is divided into the submucous plexus and the myenteric (Auerbach's) plexus. The vagus supplies the secretory glands of the esophagus. There is an anterior and a posterior anastomoses between the right and left vagus nerves. The sympathetic and vagus plexus communicate. The recurrent laryngeal nerves also give branches to the upper esophagus.

It is well known that the esophagus is normally closed at both ends, the upper by the cricopharyngeus muscle and the lower by a more or less well defined muscular pinch-cock. It is also well known that the most definite narrowing of the esophagus occurs where the arch of the aorta crosses it. Other places of compression are at the upper thoracic orifice and where the left main bronchus crosses the esophagus.

The esophagus courses downward behind the trachea, gradually shifting to the left of the midline and then again toward the right at the cardia. In its course through the neck, infections may extend from it into the region behind the thyroid gland, the deep fascia and the carotid sheath. In the posterior mediastinum, it courses immediately next to the aortic arch, the left main bronchus, the recurrent laryngeal nerves and close to the pleura and the pericardium. Affections of the esophagus may easily affect and invade the surrounding structures and, likewise, affections of the surrounding structures may compress or invade the esophagus.

Analysis of Cases. In a brief analysis of this group of 100 consecutive esophageal cases, it was found that carcinoma occurred 7 times, true spasm without apparent lesion 5 times, obstruction due to compression in disease of adjacent structures 6 times, congenital anomalies in one case, periesophageal hematoma in one case, paraesophageal abscess in three cases and mediastinitis in 4 cases.

The lesions of the esophagus are arranged according to the objective findings seen through the esophagoscope. These are edema, abrasions, lacerations, ulcers, esophagitis, hemorrhage, stricture, complete obstruction, incomplete and complete perforation, and mediastinitis.

Abrasions were seen 5 times in the cervical esophagus, 4 times at the upper thoracic orifice, once at the aortic arch and once at the crossing of the left main bronchus. Edema occurred almost as often at the same sites. Only twice was it evident that the abrasions ulcerated and these were due to considerable vomiting before the offending foreign body was removed.

Case 1. Male child, 3 years of age, swallowed a penny four hours before admission. Vomiting was severe and frequent. *Esophagoscopy*: abrasions of lateral walls and bleeding from the cricopharyngeus to the upper thoracic orifice. *Outcome*: very slow in healing. Probably due to action of gastric juices on lesion. (Fig. 5.)

Lacerations occurred 12 times in cricopharyngeal region, 10 times in cervical esophagus, 23 times at upper thoracic orifice, 5 times at aortic arch, once at crossing of left bronchus and twice in lower esophagus. These healed promptly after removal of the offending body except in cases where much vomiting occurred.

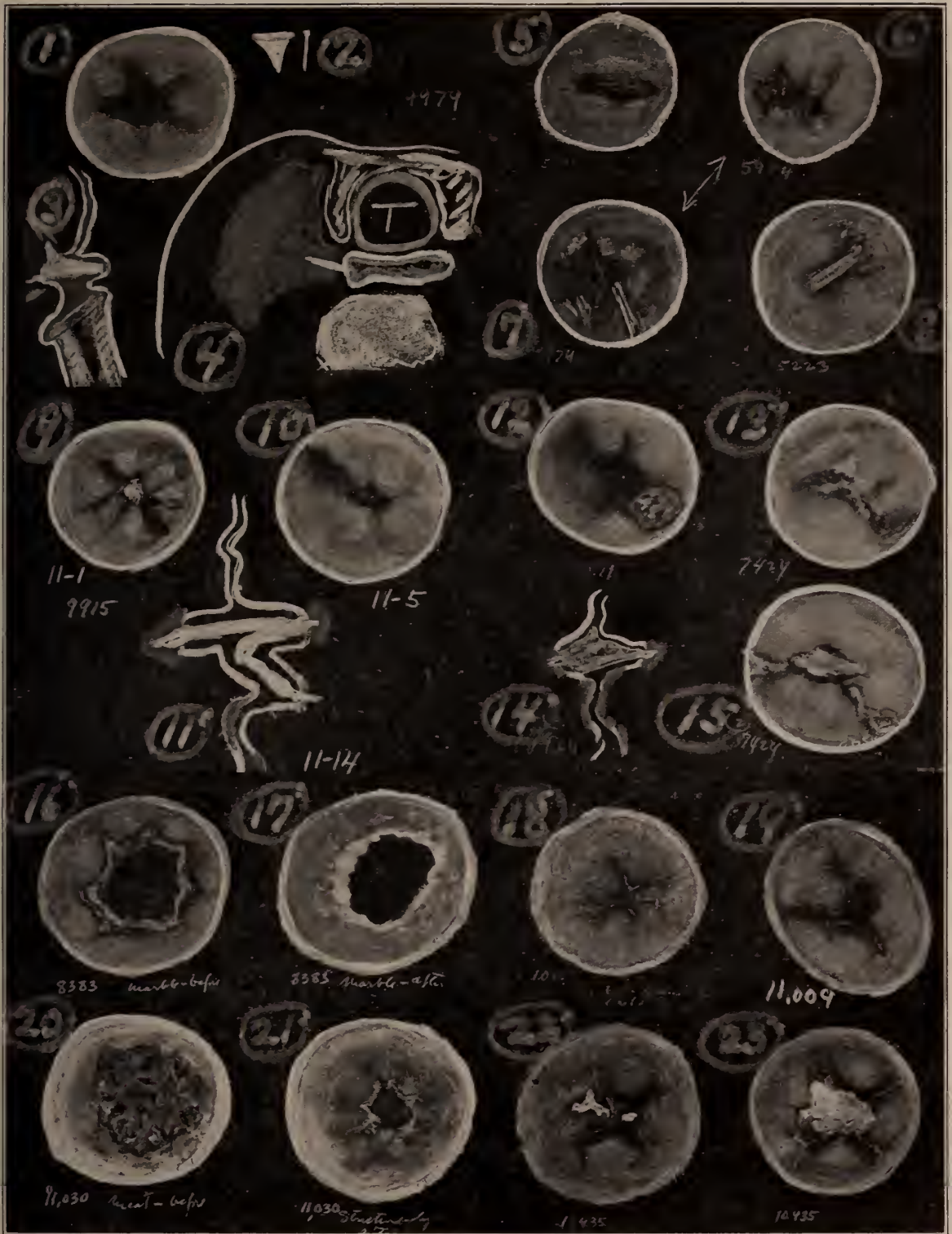
Of the true *ulcers* seen at first esophagoscopy, 4 were at the cricopharyngeus, 3 in cervical esophagus, 6 at upper thoracic orifice, two at aortic arch, two at left main bronchus and 3 in lower esophagus.

Case 2. Male 53 years of age. Thought he had swallowed a hair two weeks before admission. He noticed that it would move up and down in his esophagus when he would swallow. Considerable discomfort in cervical region when swallowing. Pains in right side of neck. Some hesitancy in moving right arm. (Fig. 12.)

Examination by x-ray: Capsule arrested at upper thoracic orifice.

Esophagoscopy: Mass of granulations in ulcerated area about half inch wide, in right side of esophagus at upper thoracic orifice. In this mass a piece of enamel porcelain (1x3x4 mm) was found and removed.

Outcome: Pain and difficulty in using right arm



Figs. 1 to 4 from Case 4. Fig. 1, bone in cervical esophagus covered with arterial blood. Fig. 2, bone. Fig. 3, side view of perforating bone and scope—diagrammatic. Fig. 4, cross section of neck showing relationship of hematoma and foreign body. Figs. 5, Case 1, coin in eos, abrasion. Figs. 6 and 7, Case 6, mucosa torn from muscularis by bamboo pole. Fig. 8, Case 9, clock key with perforation and granulations. Figs. 9, 10, 11 of Case 12, edema, esophagitis, laceration, per-

foration, mediastinitis, recovery. Fig. 12, Case 2, granulation, ulceration, foreign body. Figs. 13, 14, 15, Case 8, lacerations, incomplete perforation, foreign body. Figs. 16, 17, Case 13, marble in stricture causing esophagitis, gangrene. Fig. 18, Case 7, fish bone perforating, ulcer, eosophagitis. Fig. 19, Case 19, laceration, perforation, level left main bronchus. Figs. 20, 21, Case 5, complete obstruction by meat in old lye stricture. Figs. 22, 23, Case 10, perforation, laceration, chicken bone.

passed off in 3 or 4 days. It is possible that this small foreign body had been caught in one of the ducts of the esophageal glands.

Case 3. Female, aged 23, got chicken bone caught in esophagus. Swallowed easily for several days and then with increasing difficulty and with some pain. Pain developed in right chest on the fifth day and become constant by the seventh. *X-ray*: capsule arrested at crossing of left main bronchus. (Fig. 19.)

Esophagoscopy: A large irregular chicken bone was found and removed from just above the crossing of the left main bronchus. Several deep lacerations with ulceration and esophagitis were present.

Outcome: With bismuth and sterile liquids recovery in about ten days.

Esophagitis was evident upon first examination, 3 times at cricopharyngeus, twice in cervical esophagus, once at aortic arch, once at bronchial crossing and once in lower third.

Hemorrhage occurred into the esophagus and interfered with examination and treatment, once in cervical esophagus, 8 times at upper thoracic orifice, twice at aortic arch and once at bronchial crossing. The hemorrhage in the cervical region was arterial and also produced a very large hematoma of the neck.

Case 4. Woman, 62 years of age, while eating creamed chicken, felt a sudden stabbing pain in right side of neck. Talking and swallowing increased the pain. At the same time a mass appeared in the left side of the neck, pushing the thyroid gland forward. Upon admission an hour later, right side of neck was bulging forward and laterally making a mass the size of a large fist.

Esophagoscopy: About two hours after the accident a 9 mm esophagoscope was passed. As the end passed the lower border of the crico pharyngeus muscle, bright red blood gushed into the scope. After cautious aspiration, a long, grayish, thin object was visible lying across the esophagus about 1 cm below the cricopharyngeus. The instant the object was touched with a side curved forceps, another gush of bright red blood filled the esophagoscope. After carefully aspirating this blood, the object was not to be found. The scope was passed to the stomach but it was not found. As the scope was withdrawn, a laceration about an inch in length was seen just below the crico pharyngeus. Because the arterial hemorrhage had been so profuse, it was thought advisable not to explore further at the time. (Figs. 1 to 4.)

Outcome: Course was uneventful. No rise in temperature, pulse or respiration. Mass in neck seemed to be getting smaller. Patient was up and about on the eighth day. She ate light foods without much discomfort. On the tenth day, about 5 a. m., while sleeping in bed, patient passed out. No hemorrhage or other cause of death was evident.

Autopsy revealed the esophagus healed. In the neck, behind the thyroid and medial to the displaced carotid, was a massive organizing hematoma. Projecting into this, from the adventitia of the lateral esophageal wall,

was a triangular piece of bone about an inch in length along each side, about an eighth of an inch thick and as sharp as a razor blade. All other structures appeared normal. Though death was thought to be due to hemorrhage and infection but no convincing evidence could be found. The brain was not examined. Cause of death unknown.

Stricture was observed twice in cervical esophagus, 5 times at upper thoracic orifice, once at aortic arch and twice in lower esophagus. One case gave a luetic history. Another (baby) swallowed "heated oil." Eight were due to swallowing lye. Foreign bodies were arrested at the strictures and produced esophagitis and ulceration. In two cases the secondary inflammations caused eventual death.

Case 5. Male, aged 43 years, choked three days before admission. Unable to eat or drink anything since. Vomited food within a few seconds after attempts at eating. Soreness in chest for two days. Much mucus had come up into mouth before accident but none since. Five years before, this patient had accidentally swallowed lye. Six months before he choked on a piece of steak. This came up within three days without assistance.

Diagnosis: Complete obstruction of esophagus in mid-thoracic region at site of old lye stricture.

Operation: Esophagoscopy. Removal. Esophagitis and ulceration present.

Outcome: Recovery.

OUTCOME: RECOVERY

Complete obstruction occurred ten times, four in cervical esophagus, two at upper thoracic orifice and four in lower esophagus. External pressure on esophagus, esophageal carcinoma and foreign body were the causes.

Incomplete Perforation. Perforations may be divided into two groups. The *incomplete* perforate various depths or as deep as the muscularis. The *complete* perforate through the muscularis into the adventitia or deeper. Incomplete perforations occurred twice in the cervical esophagus, five times at the upper thoracic orifice, three times at the aortic arch, twice at the left bronchial crossing and three times in the lower esophagus.

Case 6. Boy 5 years old, while playing with broken bamboo pole in his mouth, stumbled and rammed the sharp and irregular pole down into his mouth and esophagus. No vomiting.

Esophagoscopy: Mucosa torn loose from the muscularis on the left side of the neck from the cricopharyngeus downward about two inches. Not much bleeding. No dirt or foreign body found.

Outcome: Recovery in week after use of sterile liquids and frequent cleansing of mouth and taking bismuth powders.

Case 7. Male, aged 55 years, while eating fish four days before admission, got bone caught somewhere in esophagus. Last two days he complained of discomfort and a fullness deep in his chest. X-ray was negative. Because of the persistent discomfort in chest, esophagoscopy was asked. (Fig. 18.)

Esophagoscopy: In mid-thoracic region, on the left side of esophagus, a very small hair-like object was seen projecting into esophagus. This was removed. It was a slender fish bone which had had about one eighth inch projecting into the esophagus and about one inch perforating the wall of esophagus. Some esophagitis and small ulcer present.

Outcome: Discomfort in chest passed off within two days. Recovery uneventful.

Case 8. Male, aged 27 years. About 24 hours before admission, while eating, something very sharp got caught in cervical esophagus. Swallowing became very painful and he began spitting bright red blood. X-ray with barium showed complete obstruction in upper half of cervical esophagus. (Figs. 13, 14, 15.)

Esophagoscopy: Laceration with bright red blood about nine o'clock in mid-cervical region. Unable to pass scope farther on account of edema and spasm. Next day scope could pass a little farther but still edema and spasm prevented reaching foreign body. Four days later, a third attempt was made. The edema was gone and very little swelling remained. As the foreign body was being freed from one side, it slipped from forceps and went on down the esophagus ahead of the scope. Deep lacerations with ulcerations were present.

Outcome: Recovery in one week.

Note: If vigorous attempts had been made to force the scope past the swollen and edematous tissues, perforation and serious outcome would have been certain. If blind bougienage had been done, fatal outcome could have been predicted.

Case 9. Girl two years of age. Five days before admission swallowed a clock key. X-ray showed the large part to be caught just below the aortic arch, while the sharp part was perforating the region at the aortic arch. (Fig. 8.)

Esophagoscopy: Under ether (the only case we have given ether for removal of foreign body from esophagus) key was removed. Mucosa markedly eroded over aortic arch. Blood and purulent granulations. Erosion penetrated to the muscularis.

Recovery after five days with sterile fluids and bismuth.

Complete perforation occurred three times in cervical esophagus and once at upper thoracic orifice. One case had perforation of hypopharynx and lacerations of upper thoracic orifice. The perforation led to thrombosis of the internal jugular while the lacerations of the esophagus healed.

Case 10. Female, 62 years of age, choked 24 hours before admission while eating chicken pie. Physician attempted to push down foreign body by probing. Some discomfort deep in neck and chest. Pains in deep

cervical region, low in left side of neck. Left side of head sore. Difficulty in raising left arm. X-ray with barium showed spasm at upper thoracic orifice and at level of crossing of left main bronchus.

Esophagoscopy: Two lacerations down to muscularis at level of upper thoracic orifice. Two deep lacerations with some muco-pus above foreign body at crossing of bronchus. Bone was about two inches long and very irregular. As it was removed from one side of esophagus, forceps were changed to get better presentation. As this was done, bone began slipping down esophagus and stayed ahead of scope.

Outcome: Recovery in about ten days.

Note: A bone, very sharp and irregular on both ends and perforating, presents the type which brings about a fatal outcome when blindly manipulated.

Case 11. A woman 48 years of age swallowed a piece of glass three years before admission. Two other attempts had been made by physicians, three and two years before but had been unsuccessful. During the past year the patient's right arm had become so weak that she was unable to raise it to dress herself. The right side of her neck was swollen and tender, she said. At times much foul material was regurgitated.

Esophagoscopy: Just below cricopharyngeus muscle in right side of esophagus, there appeared to be a very irregular loose tissue stretched across as though there were a pocket leading from the normal esophageal lumen into the peri-esophageal tissues. This "membrane" separated easily as the scope was passed. The tissues in this pocket looked like very dense, somewhat necrotic, material without any evidence of epithelium. About 1½ inches into this pouch some gritty mass was felt and removed. It was the irregular piece of glass which she had swallowed three years before.

Outcome: Upon arrival in her room, subcutaneous emphysema was so extensive that it extended from below the lower jaw downward over the chest. The patient's color was grayish blue. She quickly relieved some of our alarm by saying that this same thing had occurred at both other operations and that it soon passed off.

Recovery of use of right arm occurred in about one month, at least for ordinary purposes. Eight months later the patient died from some other cause. No autopsy was obtained because she lived in a distant city.

Note: Here was a case of complete perforation into the tissues outside the muscularis. The local resistance was remarkable. The chronic paraesophagitis was extensive.

Mediastinitis occurred four times, once following esophagitis and three times following complete perforation.

Case 12. Woman, 43 years of age, got chicken bone caught in esophagus while eating five days before admission. Upon admission she complained of gnawing pains deep in her chest and very painful breathing. She was very anxious and restless all the time. Temperature was 103 on second day. On third day she was unable to swallow even liquids. Upon admission she was so sick and weak that ice packs on neck and upper chest and subcutaneous liquids were given. Upon the

third day after admission she was able to swallow a little water. On the next day esophagoscopy was done. (Figs. 9, 10, 11.)

Esophagoscopy: On Nov. 1, a perforation filled with granulations down to the muscularis was seen below the cricopharyngeus. Esophagitis with swollen mucosa was so marked that even a 7 mm scope could not be passed further. On Nov. 5, still unable to pass even 6 mm scope. Much foul pus and granulations present. On Nov. 14, 7 mm scope passed down to a very extensive area of esophagitis, granulations and foul pus. After aspiration and removal of much of this debris, a very slender bone about $2\frac{1}{2}$ inches long was encountered at the upper thoracic orifice. Bone was carefully loosened from its bed on one side and found to have two long prongs buried deep into the muscularis on the opposite side. Upon removal, the bone was covered by foul, necrotic material, smelling like carious teeth.

Outcome: Within ten days temperature had subsided and patient discharged.

Note: Here is another case which would have proven fatal if blind probing had been resorted to. It is likely that death would have resulted if the bone had been exposed and removed by force at the first esophagoscopy. Nowhere else in the body would we attempt to tear into structures as vitally important as these and permit extension of a virulent infective process.

Case 13. A boy, 9 years of age, swallowed a marble while playing. Physician attempted to push it down with stomach tube. Patient became critically ill the same night and was rushed to the hospital about 60 miles away. (Had swallowed lye at 2 years of age. For several years had difficulty in swallowing but had improved past 2 years.)

Examination: Underweight boy, very pale and very sick. Much saliva filling mouth and some passing into trachea.

Esophagoscopy: 7 mm scope passed down to level of upper thoracic orifice where the mucosa was markedly edematous. In the center of area was the marble, barely visible. No forceps spaces. With small esophageal bougies, one area to left of marble was gently dilated. Small spoon entered but as marble was being raised, it slipped downward and caught in a second stricture about one inch below the upper one. (Figs. 16 and 17.)

Course: Next day temperature 101 to 102. Fluids were given subcutaneously. Second day temperature was 102 to 103. Patient was delirious much of the time.

Second esophagoscopy was done on third day. Edema not much worse than the first attempt. With gentle dilatation by small esophageal bougies, forceps spaces were made and, with a larger esophageal spoon, marble was raised out of its bed, up past the upper stricture and removed.

Course: Fourth day after admission, temperature 102, respiration 40 and pulse rate 120. Able to swallow liquids. Delirious most of time. Neck rigid. Fifth day, temperature 104 to 106R. Respiration 30 to 40. Pulse 130 to 160. Expired on fifth day after accident.

Autopsy by Dr. Bohrod. Strictures as seen at operation. No perforations of esophagus. Esophagitis and erosion. There was a gangrene of post-esophageal tissues extending from base of skull downward into the abdominal cavity. No pus was found here. Gangrenous tissue extended into left pleural cavity where there were about $1\frac{1}{2}$ pints of foul, grayish-yellow pus. Total collapse of left lung. Heart and mediastinal structure were pushed into right chest. A bronchopneumonia and a recent tuberculosis were present in the left lung.

Note: It appears that organisms penetrated the cicatricial tissues of the esophagus where the nutrition had been so markedly interfered with by the pressure of the foreign body. Organisms probably penetrated into the postesophageal tissues and started the gangrene. The bronchopneumonia probably resulted from the aspiration of esophageal secretions which were pouring over into the trachea.

Diagnosis: Gangrenous mediastinitis. Foreign body in lye stricture. Empyema, bronchopneumonia and early tuberculosis.

Case 14. Male, 45 years old, choked while eating steak. Complained of a sticking in lower pharynx on left side and in upper esophagus. X-ray showed obstruction at upper thoracic orifice.

Esophagoscopy: Small abrasion in left pharynx above larynx and a laceration of esophagus at level of upper thoracic orifice. An irregular piece of bone with meat attached (1x1.5x3 cm) was removed.

Course: Discharged on third day. On fifth day a house call was made because patient had chills and some difficulty in moving shoulders. Complained of a deep seated pain in neck and a soreness and fulness throughout chest. During the next eight days the very septic type of temperature and the chills led to a diagnosis of mediastinitis and septicemia. Death occurred on the 15th day after the accident.

Autopsy by Dr. Bohrod. Acute gangrenous periesophagitis, mediastinitis, thrombophlebitis of left internal jugular and left innominate veins, multiple septic infarcts in lung, septic infarcts in spleen and kidney and acute myocardial degeneration.

In a summary of the *locations of the lesions* observed, 8 out of 11 abrasions were in the cervical esophagus and upper thoracic orifice. Of 43 lacerations, 22 were in the cervical esophagus and cricopharyngeus and 23 were at the upper thoracic orifice. The others were at various levels. Complete perforation occurred 3 times in the cervical esophagus and once at the upper thoracic orifice. Of 12 cases of hemorrhage, 8 were at upper thoracic orifice. Of ten cases of stricture, five were at upper thoracic orifice. It is, therefore, evident that the upper thoracic orifice was the site of nearly 40 per cent. of all the lesions.

Symptomatology: It does not seem possible to determine by symptoms alone whether a foreign

body is present and causing them or that the lesions are the cause after the foreign body has passed. The injury itself is more concerned than the foreign body in giving rise to the symptoms. Therefore any persisting symptoms should be investigated.

Ulcer, esophagitis, perforations and mediastinitis give rise to symptoms increasingly severe according to the extent and depth of the involvement. Involvement of the deep cervical glands in the neck may give rise to deep pressure, ache or pains low down in the neck. Swelling of the mediastinal and bronchial glands may give rise to a fullness, a discomfort, an ache or deep pain in the chest. Therefore when such symptoms are complained of, even though history of foreign body may be negative, the esophagus must not be forgotten in a search for their cause.

CONCLUSIONS

1. A knowledge of the anatomical structure and relationship of the esophagus is essential for the interpretation of symptomatology in injuries of the esophagus.

2. Symptomatology increases in severity as the severity of the lesion, i. e., from abrasions to complete perforation and mediastinitis.

3. In this series, nearly 40 per cent. of the lesions were found at the upper thoracic orifice.

4. Vomiting of acid gastric juices complicates cases of injury to the esophagus.

5. Blind bougienage and forceful ramming of foreign bodies is again to be condemned. It may be successful in many cases but will cause a fatal outcome sooner or later.

6. All cases of persisting esophageal symptoms should require careful study by the x-ray and the esophagoscope.

Jefferson Bldg.

DISCUSSION

Dr. Wm. A. McNichols, Dixon: I wish to congratulate Dr. Sneller on his presentation of this very interesting subject. Dr. Jackson in his book, "Bronchoscopy and Esophagoscopy," devotes a half page to injuries to the esophagus. Yet we know that he has case records of such cases that would fill volumes.

I wish to show two slides demonstrating two types of injuries to the esophagus. The first shows a quarter in a baby's esophagus lodged just below the cricopharyngeus muscle. Several years ago a baby was brought into the clinic with a high temperature and a well developed mediastinitis. This child for the last twelve days had complained of difficulty in swallowing. The x-ray showed a foreign body in this characteristic location. Neither family nor the attending physician

had suspected a foreign boy. We decided to remove it. This was done and the baby died twenty-four hours later. Just how much the manipulation hastened the death one cannot say. The next slide shows a mediastinitis high up which was caused by an esophagoscope in the hands of an untrained physician. This young girl went to the physician's office complaining of indefinite throat symptoms. He decided to try his newly acquired instruments with the resultant perforation of the esophagus. The patient was sent to the hospital where in spite of proper management the patient died four days after the accident.

I would like to stress two points: First, we must be on the constant watch for foreign bodies in the upper air and food passages; Second, adequate training in the use of the instrumentarium for bronchoscopy and esophagoscopy can so readily be obtained in this country one is not justified in experimenting on humans; further one must keep constantly working at it to perfect his technic.

Dr. Paul Holinger, Chicago: There are many points of interest which have been stressed in this discussion. In the first place, the question of *degree* of perforation is important when one presents mortality statistics in relation to this disease because we have been taught that complete perforation of the esophagus means mediastinitis and death very quickly. I was gratified to hear that we do not always have fatalities in incomplete perforation, however, and this point is certainly pertinent in view of the statistics.

A number of etiologic factors of esophageal perforation which are of prophylactic significance might be mentioned. In the first place, poorly designed instruments such as esophagoscopes of improper size or shape, the mechanical stricture dilators, and rigid heavy bougies are all dangerous. In the second place the so-called cotton or wool sandwiches or bulk diets given children who have swallowed safety pins make the safety pin problem infinitely more difficult because the pin must be disentangled before it can be safely removed, and perforation may occur during this procedure. Thirdly, there is grave danger in further repeated instrumentation in suspected perforation. It is much safer to wait until the process has localized, and even then it may be best to resort to external drainage.

This introduces the question of therapy in esophageal perforation, and of course the therapeutic procedure is dependent upon whether complete or incomplete perforation is present. Bismuth subnitrate or subcarbonate dry on the tongue following any esophageal trauma aids in coating the mucosal abrasions. In the more extensive lacerations, however, it is of interest to note that in Europe, South and North America there are three separate schools of thought regarding therapy. Doctors Fishman and Lederer recently reviewed the European literature and showed that the Viennese school advised prophylactic mediastinotomy in any case of complete perforation. In South America drainage is attempted through the esophagoscope after the process has localized, while the accepted procedure in this country is to wait until pus is present and then drain exter-

nally through the neck, avoiding further intracosophageal instrumentation.

Dr. George Woodruff, Joliet: Dr. Jackson's book scares you about the danger of perforation and the trauma you can cause with the esophagoscope, which is probably a good thing. Recently I had quite an interesting case, a man who swallowed a needle in some food—how it got there nobody knows. He attempted to pull it out, hooked it over the middle and perforated the hypopharynx, so that the lower part of the needle lay just below the level of the hyoid bone.

I was called and told that this man was coming to see me and we had an x-ray picture which showed thickening of the posterior wall and infiltration, and the needle lay back of the hypopharynx. We thought it might be free in the lumen. I did a hypopharyngoscopy and there was some laceration and bleeding and I stopped and put him to bed. I put him on bismuth and added some calomel and foreign protein and a sterile diet—hoping to build up a reaction against infection. He did quite well, quieted down, and in a few days a mirror laryngoscopy was done. I could see some swelling. I sent him home for ten days, and got another man to look at the case, and neither of us could see any portion of the needle. We concluded that it perforated completely into the neck, posteriorly along the side of the vertebrae. He had some pain around the ear. I sent him home again. A few days later I got a telephone call, later a card, saying that not long after he got home he felt as if the needle had moved. His family doctor was going to send him up, and as they were preparing to do so, he coughed it up. I do not take any credit in this case, except that I did not try to do too much. A sharp needle, if it is high enough up, might penetrate without causing any infection. The character of the foreign body has something to do, apparently, with the danger of mediastinitis.

Dr. H. L. Ford, Champaign: I should like to add that I feel, in any discussion of injury of the esophagus, we should not neglect to mention the blind bougienage which so frequently produces injury. Not infrequently a patient complains of a foreign body, the family doctor passes the stomach tube successfully and tells the patient it has gone on down. I feel that we should mention this to criticize it, and be sure it gets into print in the JOURNAL.

Dr. Charles D. Sneller, Peoria (closing): I want to thank everyone for their kind remarks, particularly Dr. Holinger for adding some points which I intended to incorporate and some which I did not. The subject is really a bigger one than could be discussed in a few hours, especially if a large number of cases are seen. One important point may be brought up. When a case is received which is apparently foreign body, we should study the case carefully and not just rush in with the esophagoscope. Particularly we should wait and find out what is going on, if there is a temperature and any chance of a mediastinitis being present. We will save lives by waiting a little bit. I had two doctors criticize me severely because I went down twice and did

not get a foreign body. They went in and got the foreign body, but the patient died. A man 40 years of age, when eating pork steak, got a foreign body lodged in the cervical esophagus. I removed the bone about thirty-six hours later. He went home in two days. I was called on the fifth day; the temperature was 101°; there was pain in the chest. Within three days he was unable to raise the left arm; there was some swelling deep in the neck. On the twelfth day he died. At autopsy there was found a thrombus from one of the pharyngeal vessels, down the jugular into the heart. The interesting thing about this case is that the esophageal incomplete perforation had completely healed. We discovered there had been a small perforation of the hypopharynx on the left side, and that little infection caused this thrombus and the death of the patient. Out of seven cases of true mediastinitis, so far as we could make out, four died and we had three autopsies.

CORRELATION OF CLINICAL TREATMENT OF BURNS WITH RECENT EXPERIMENTAL STUDIES

HENRY N. HARKINS, M. D., PH.D.

CHICAGO

It has been estimated¹ that about six thousand persons lose their lives each year as the result of burns. While this is only one-sixth the number of fatalities due to automobile accidents, the pathology of burns is essentially the same in each case differing only in the extent and depth of the burn, while automobile accidents cause death in a countless number of ways. Hence, a definite therapeutic program can be adopted in the treatment of burns and with so many lives at stake the mode of procedure is a question of vital importance.

Certain recent discussions have advised abandoning the tannic acid treatment of burns and substituting saline dressings or baths. In the belief that this may be a dangerous practice to follow, I have analyzed certain recent experimental work on burns. Davidson² originally introduced the tannic acid treatment in the belief that tannic acid would precipitate toxic proteins formed in the burned tissues and prevent their absorption. Some more recent work especially by Underhill³ and Blalock⁴ indicated that there might not be any burn toxin acting at all but that death in burns might be due to loss of blood

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plasma from the blood stream in enormous amounts. The extent of plasma loss was shown by these authors to be about 60% of the plasma normally occurring in the blood. They found a marked state of secondary shock with diminished blood volume in experimental animals. Blalock measured the amount of plasma lost by burning one side of an animal and then bisecting and weighing the two contralateral halves. The writer^{5, 6, 7, 8} performed experiments somewhat similar to Blalock, burning only one side of completely anesthetized animals. These animals were placed on a balanced tipping tray connected to a kymograph. As the burned side of the animal became gradually heavier, the increase in weight was recorded on a kymographic tracing. Again the amount of plasma lost into the burned tissues was sufficient to cause secondary shock. While a burned dog's skin does not weep, in human beings there is the added factor of loss of fluid from the weeping burned surface. All of us who have used the tannic acid treatment have noted a white precipitate formed when the tannic acid spray strikes the weeping burned surface. This white precipitate, not unlike that formed when urine is tested for albumin serves as a qualitative test for protein in a burn exudate. In certain of the cases to be reported later in this paper, a quantitative test for protein in the blister fluid shows that it is present in the same concentration as in blood plasma. It stands to reason that the loss of this plasma-like fluid either into the burned tissues or from the burned skin is of much more serious consequence than the loss of a mere transudate. As an example in kind, it is obvious to all of us that while one can urinate 2 to 3 liters a day, the loss of 2 to 3 liters of blood in a day is of quite serious import.

While these authors including Underhill, Blalock, and the writer have shown that plasma-like fluid is lost in burns in quantities sufficient to account for death in many instances, this does not positively rule out the presence of a burn toxin such as was advocated by Bardeen,⁹ Davidson² and especially Robertson and Boyd.¹⁰ These latter authors reported that extracts of burned skin were quite toxic, but later Underhill,³ using the same technic, reported that it was the alcohol in Robertson and Boyd's extracts that was the toxic factor. This cast doubt on Robertson and Boyd's toxic theory. However, many reviewers

of the subject of burns read only the first article and not the later criticism and have perpetuated the toxic theory in the literature.

Recently, however, certain careful workers have found new evidence for a toxin production in burns. Mason, Paxton and Shoemaker¹¹ found experimentally that potassium iodide is absorbed as easily from burned as from normal tissues. This gave a new outlook to the subject of absorption of burn toxins as Underhill had previously shown that there is a markedly delayed absorption of strychnine and phenolsulphonephthalein from burned tissues. Blalock¹² gave the toxic theory some credit in a recent discussion stating that: "I believe that deaths which occur from three to ten days following severe burns are due in large part to the absorption of protein decomposition products."

Wilson^{13, 14, 15} has had a very extensive clinical and experimental experience with burns. In his capacity as Surgeon to the Children's Hospital in Edinburgh, he has used the tannic acid treatment extensively. In Edinburgh open fireplaces and boiling water on stoves are especially conducive to extensive burns and a large number of these cases are seen every year. Besides popularizing the tannic acid treatment in England, in conjunction with Stewart, Jeffrey and Roxburgh, Wilson has shown experimentally that protein-containing extracts of burned skin are quite toxic. The fluid is toxic when introduced subcutaneously as well as intravenously; toxicity appears as early as six hours and becomes steadily more marked up to forty-eight hours after the burn, and the toxic reaction is not dependent on bacterial toxins. Earlier work done by the writer in association with Wilson¹⁶ showed that a toxin is not demonstrable in protein-free extracts of burned skin.

Blood Concentration in Severe Burns. Irrespective of whether one ascribes to the view that death in severe burns is due to the action of absorbed toxins or to plasma loss into the burned tissues, the fact remains that clinically extensive burns are often accompanied by marked blood concentration. Tappeiner¹⁷ in 1881 was the first to report this finding. One of his patients had a red count of nine million following a severe burn. Locke¹⁸ in 1902 reported ten cases of burns seen at the Massachusetts General Hospital, four of them having a red count of nine million or above. Underhill

in 1923 renewed interest in blood concentration following burns, by reporting instances of hemoglobin percentage as high as 209. McClure and Allen¹⁰ at the Henry Ford Hospital stated that "a blood concentration of 125% is indicative of a dangerous condition and that one of 140 of a condition which is not for long compatible with life." The marked blood concentration in one of our patients with hemoglobin percentage going above 140 followed by recovery is shown in Figure 1.

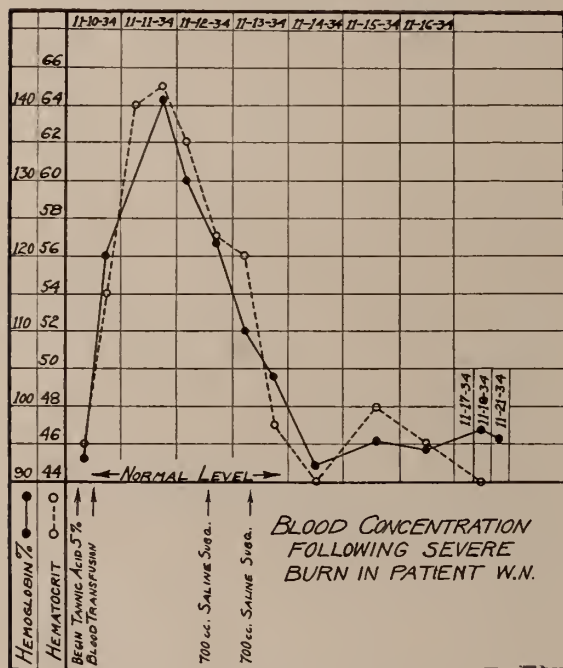


Fig. 1. Blood concentration with recovery in patient W. N., Case 1.

Rational Treatment of Burns. Whether one ascribes to the toxic or the plasma-like fluid loss theory of the causation of secondary shock in burns, two facts stand out: first, that secondary shock is one of the chief causes of death from burns (secondary shock caused 80% of the deaths in Wilson's series) and second, that tannic acid seems to be effective in combating such shock when present. It matters little whether the tannic acid acts by precipitating toxins or by sealing off the capillaries and preventing fluid loss, the important thing is that to the best of our knowledge at the present time tannic acid combats shock and lowers the death rate in burns.

A brief outline of various methods of burn treatment will now be given. These methods can

be divided into first, various occlusive dressings, antiseptics, and solutions used usually before the introduction of tannic acid, and second, methods depending on protein precipitation chiefly based on tannic acid itself. The first group includes vaseline dressings, paraffine dressings, carron oil, cod liver oil, sodium bicarbonate, picric acid, butesine picrate, saline dressings or baths, horse serum and cresol and Dakin's solution. The second group can be listed as follows:

PROTEIN PRECIPITANT METHODS OF BURN TREATMENT

A. Tannic acid preparations:

1. Tea (Chinese, 5000 B.C.)
2. Ink treatment (Jews and Filipinos. Older inks contained considerable tannic and gallic acids, modern inks sometimes are chiefly coal tar products).
3. 2.5% solution (Davidson, 1925)
4. 5% solution (Used mostly in U.S.A. at present)
5. 20% solution (Used in England, Wilson, 1928)
6. Tannic acid baths (Wells, 1933)
7. Tannic acid buffered with sodium bicarbonate (Seeger, 1932)
8. Cutch extract (60% tannin)
9. Tannic acid plus silver nitrate (produces eschar in about one-fifth the time that tannic acid alone does, Bettman, 1935)
10. Tannic acid jelly.

B. Tannic acid plus antiseptic base.

1. Acriflavine, 1-100 (Wilson, 1934)
2. Dettol, 20% (Clark and Cruickshank, 1933)
3. Bichloride of mercury 1-2000 (Mitchiner, 1933)

C. Gentian violet, 1% (Said to combine antiseptic properties especially against streptococci with the production of a more pliable eschar than tannic acid, Aldrich and Firor, 1933)

D. Ferric Chloride, 5% (Eschar more rapidly formed than by tannic acid and more pliable, Coan, 1935)

Report of Cases. In the past eight years 160 cases of burns have been treated at the University of Chicago Clinics. Since only 3 of these cases died, one would think this a remarkable mortality percentage until it is pointed out that 95 of these cases were treated in the outpatient department often with minor first or second degree burns of the extremities or face usually treated with butesine picrate. Of the remaining 64 hospital cases, in about one-third the burn was only an incidental complaint. These figures are mentioned to point out the error of statistical studies of burns. Even when only cases involving a relatively high percentage of the body

surface are included the depth of the burn must be taken into account. It is not true that depth can be excluded and that only the extent is important, for who of us has not seen a first degree sunburn involving most of the body surface with recovery? Therefore, no statistical analysis of these cases will be made, but ten of them will be quoted to illustrate certain points of interest.

CASES ILLUSTRATING BLOOD CONCENTRATION IN BURNS

Case 1. *Acute extensive third degree burn with marked blood concentration.* W. N., male, aged 4 years, was pushed into a bonfire in the sitting down position on November 10, 1934, and seen by the writer 40 minutes later. On admission there was found an extensive third degree burn of both legs, thighs, and buttocks involving 20% of the body surface as calculated by the Berkow method. Because no grease or other material had been applied tannic acid treatment was immediately begun after washing the burned areas with sterile water. Morphine sulphate, intravenous saline and blood transfusions were given. The blood pressure remained normal, the white blood count averaged from 20,000 to 32,000 during the first seventy-two hours. The red cells showed a marked concentration as shown in Figure 1. Subsequent course included four additional blood transfusions and eight pinch graftings. Complete healing ensued.

Case 2. *Acute extensive third degree burn with slight blood concentration.* W. T., female, aged 4 years, was admitted 12 hours after a third degree burn of almost the entire trunk and part of both arms (28% body surface by Berkow's method of calculation). Butesine picrate was used in another hospital, where the child was given no fluids despite vomiting. She was pulseless and cyanotic on admission to the University of Chicago Clinics. The ointment was washed off, tannic acid applied and two blood transfusions given with recovery after repeated pinch grafting. Twelve hours after the burn, the red count was 7,000,000 hemoglobin 115 and hematocrit 57.

These two cases illustrate blood concentration following burns. Besides the oozing from the burned surface, there was marked visible swelling of the burned tissues.

ANALYSIS OF BLISTER FLUID

Case 3. *Second degree burn. Analysis of blister fluid.* F. T., male aged 26 years, burned his right hand in an alcohol flame just before admission. Extensive blistering was present. Butesine picrate ointment applied with recovery. Analysis of blister fluid: total protein 3.4 grams %, non-protein nitrogen 22.2 mg. %, sugar 58.3 mg. %, and sodium chloride 600.2 mg. %.

Case 4. *Second degree burn. Analysis of blister fluid.* H. T., female, aged 13 years, blister of foot, butesine picrate ointment applied with recovery, analysis of blister fluid: total protein 3.0 grams % and sodium chloride 602.7 mg. %.

The amount of fluid lost into these blisters

was not of any consequence. The type of fluid lost is undoubtedly the same in more extensive burns and since this fluid is similar chemically to blood plasma its loss from the blood stream is of more importance than loss of a mere watery transudate. This loss probably accounts for part at least of the blood concentration present in extensive burns. Since the fluid lost is protein containing, the possibility is suggested that in shock due to burns blood transfusion is a more rational mode of therapy than saline infusion.

ESCHAR IN TANNIC ACID TREATMENT OF FRESH BURNS

Case 5. *Thick tannic acid eschar is not always indicative of third degree burn.* T. K., male, aged 2 years, received an extensive scald over the chest and arms to which tannic acid was immediately applied. Although the eschar was apparently as thick as that in Case 1, when it came off two weeks later, good epithelium was present beneath. It does not seem reasonable to assume that the epithelium had grown over such an extensive area in so short a time.

This case illustrates that an eschar can be formed in a severe second degree burn.

Malignancy in Burn Scars. Carcinoma is a well known complication of burns in which epithelization is incomplete and chronic ulceration occurs. The condition is known as Marjolin's ulcer. It may develop in early adult life in cases of burns received in childhood. A little recognized fact is that sarcoma may also develop at the seat of a burn. Keloid is a common late complication but it has not heretofore been reported to undergo sarcomatous degeneration. In the following cases a sarcoma arising in the field of scar resulting from a burn may have been produced by the latter.

Case 6. *Sarcoma in old burn scar.* B. S., female, aged 10 years, was burned on the chest and right breast. Because of keloid formation roentgen therapy and plastic surgery were performed. Seven years later she died of sarcoma of the right breast with internal metastases at the age of 17. Excision of the right breast was performed over a year before death and sections of the tumor showed it to contain spindle cells with numerous mitotic figures growing wildly. Recurrences excised five and seven months later showed the same microscopic picture.

Case 7. *Sarcoma in old burn scar.* A. C., female, aged 67 years, died of sarcoma developing on the right thigh in the scar of an old burn received at the age of 10. The original burn was third degree, kept the patient in bed 2 years, ulcers were present 10 years and grafting never was done.

Malignancy such as this rarer type or the more common carcinomas is always to be considered.

Roentgen therapy may have been an added factor in Case 6. Because of these malignancies, the necessity for a clean plastic result is brought to attention.

Grafting of Old Unhealed Burns and Importance of Blood Transfusion Before Grafting. The relation of the general condition of the patient to the taking of skin grafts has been emphasized in the past, but only too often is forgotten. A good dictum to follow is never to graft until the hemoglobin has been brought above 70% by blood transfusions. Even in children where general anesthesia is used for grafting, infiltration of novocaine containing a small amount of adrenalin beneath the donor site prevents a further loss of blood. Another point in skin grafting too often neglected is to remember that all burn granulations are infected. A separate set of instruments should be used on the granulating area and another on the donor site to prevent transfer of bacteria from the former to the latter. If silver foil is applied directly to the donor site at the close of the operation and the dressing not disturbed for ten days, the donor areas will be found epithelialized entirely, in the majority of cases. In cases where attention is not paid to this important aseptic precaution, I have seen the original granulating area long since healed while the donor area is discharging pus as long as four months after the original grafting.

Case 8. *Granulating area first seen eight months after burn.* C. C., male, aged 5 years, had 14% of the body surface burned on the left leg on March 16, 1934. The granulating area was not grafted and a contracture developed so that when first seen by me on November 11, 1934, he was in a markedly deformed condition. Nine blood transfusions and ten Thiersch and pinch graftings were made with recovery. At one stage in the grafting it was noted that the grafts did not take well. The hemoglobin at this time was found to be 42. Subsequent blood transfusions restored the blood to a normal level and the grafts then took better.

DEATH FROM BURNS DUE TO SEPSIS

Case 9. *Second and third degree burn with death from sepsis 7 days later.* L. R., male, aged 44 years, second degree burn of left leg, face, neck, thorax and arms, third degree of hands and forearms following gasoline explosion. Blood concentration 24 hours later; hemoglobin 140% and red count 7,200,000. Treatment with hypodermoclysis of normal salt solution, blood transfusions, and butesine picrate to the burned area. Pyarthrosis of the left knee, due to streptococcus hemolyticus was noted on the seventh day with a fever of 106.6° F and subsequent death. Necropsy was refused.

Case 10. *Second and third degree burn with death from sepsis and Curling's ulcer 11 days later.* D. M., female, aged 4 years, fell into a hot bathtub receiving second and third degree scalds of the thighs, legs, buttocks, arms, one-half of the back and almost the entire trunk anteriorly. Vaseine dressings were applied and she died 11 days later. Before death she developed a peritonsillar abscess and thrombosis of the veins of the right arm. The temperature rose above 104° F each of the last six days of life. The chief point of interest shown by the necropsy was a penetrating ulcer of the posterior portion of the duodenum 5 cm. below the pylorus. The ulcer was 1 cm. in diameter, penetrated the muscular layer and its base was formed by a thin layer of fibrous tissue. This was diagnosed as a typical Curling's ulcer.

Of the three deaths in the series, that in one instance was not directly connected with the burn being due to a chest wound infection following removal of a broken hypodermoclysis needle with secondary empyema on the same side. In the other two cases as well sepsis was the chief factor in exitus. Neither of them received tannic acid treatment. Duodenal ulcer following burns has often been reported in the literature, the first descriptions being by Long²⁰ in 1840 and Curling²¹ in 1842. In our case the ulcer may well have been on an infectious basis similar to the peritonsillar abscess in the same patient.

Comment. A review of experiments on burns and a study of extensively burned patients indicate the probable merit of the tannic acid therapy. Severe burns are prone to develop shock and whether this be due to toxins or fluid loss, a protein precipitating agent will theoretically be of advantage. In old granulating surfaces due to burns, tannic acid has no rôle and this latter type of patient is most often seen by plastic surgeons. Their adoption of saline dressings as the chief mode of treatment preliminary to grafting should not serve as a standard for those of us who as general practitioners or surgeons see burns early and in their fresh state. For fresh burns tannic acid still has an important place in the therapy of extensive burns.

SUMMARY AND CONCLUSIONS

1. Extensive burns are often accompanied by secondary shock and blood concentration. Whether this be due to toxin production or to loss of plasma-like fluid into the burned area, the tannic acid treatment is a logical method of combating such shock.

2. Various methods of applying tannic acid are discussed.

3. Examples are given of certain complications of burns including sarcoma developing in burn cicatrices, and ulcer of the duodenum (Curling's ulcer).

4. Several practical points in skin grafting burned areas are emphasized.

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DISCUSSION

Dr. D. J. Lewis, Springfield: Dr. Harkins has directed our attention to the disturbed physiology found in cutaneous burns and has suggested that treatment should be directed along lines that will correct or counteract that disturbance. It is only thirteen years since Underhill and his group made the first of their many contributions concerning this altered physiology. Many other workers have added their bit of information, so

that at the present time we have a fair idea of the changes that have taken place, or are about to take place in our patient. The situation may be summarized as follows: The burned patient presents himself in pain—in varying degrees of shock—with disturbance of the heat regulatory mechanism and with a skin wound that will allow blood plasma hemorrhage and easy entrance of infection.

1. Pain should be immediately relieved by opiates and dressings that stop its origin.

2. Shock is shock in any type of injury, and measures which are effective in treating surgical shock are effective here.

3. The disturbance of body heat regulation necessitates keeping the air temperature near that of the normal body. This is easily accomplished by the heat cradle.

The loss of blood plasma is best corrected by transfusion and the giving of relatively large quantities of physiological saline or Ringer's solution. The blood hemoglobin per cent. is a good indicator of the degree to which blood concentration is taking place.

4. The skin wound should have all definitely dead tissue removed and some escharotic solution applied. As Dr. Harkins has said, there are many such solutions available and each solution or method of forming an eschar has a champion. They all really accomplish the same purpose, that is, they convert the remaining dead tissue into a protective membrane that tends to minimize blood serum loss and stops pain. This membrane is not a suitable culture medium for bacteria and infection is prevented or delayed. Finally, we now use early skin grafting to hasten recovery and prevent impairment of function and deformity.

There has been a lot written about toxic absorption as a cause of the so-called secondary toxemia of burns. Many workers have attempted to demonstrate toxins and poisonous products in the burned tissue. These attempts have usually ended in showing no definite toxin or poison. The essayist, and Wilson of Great Britain, have apparently demonstrated a depressor substance in burned tissue. They still must show that it is absorbed from burned sites in sufficient quantities to cause the secondary toxemia before definite conclusions can be drawn concerning the importance of this finding.

I say this because Underhill's workers found an increased capillary permeability from the blood into the edema fluid of the burn, and a diminished rate of absorption of the dyes from the edema area into the blood. They injected lethal doses of strychnine into the wound and at its periphery and found no symptoms of poisoning in the experimental animals. I believe that Aldrich has advanced a very plausible explanation of the secondary toxemia as an infection that develops rapidly after the first twelve hours in untreated burns. He believes that the eschar treatment of the wound changes good culture media into a bacteriostatic membrane.

Blair and Brown of St. Louis believe that constant saline packs supplemented by hypertonic salt baths, aid in the early restoration of function. They especially

advocate this treatment in burns about flexures and joints. I notice that this week Crile, Jr., of Cleveland, also advocates saline soaks, especially hypertonic solutions. I mention this so that the essayist in his closing remarks can again point out why he considers this a dangerous procedure.

Some recent writers are pointing out the dangers of the improper use of tannic acid and other escharotics. Taylor of Indianapolis last month warned of the danger of tannic acid killing the deeper layer of epidermis when the cornified layers had been removed. This possibility should be thoroughly investigated so that we may know whether these solutions harm the deeper layers of epithelium, since these layers will be called upon to heal the wound. Traub of New York has just this week reported some cases of permanent pigmentation of the skin following the use of iron salts as wet dressings. Ferric chloride has been suggested by Coan as an ideal tanning agent in treating burn wounds.

The morbidity and mortality from the so-called secondary toxemia of burns has been greatly reduced in the last ten years by close attention to correcting disturbed physiology and the eschar treatment of the wound. The percentage of the severely burned who die in primary shock remains about the same now as formerly. James Mason has reported a nice comparison of results before and after the adoption of the tannic acid treatment. He showed that this method of treatment reduced the mortality from secondary toxemia to 50% for adults and 30% for children when a comparison with older methods was made. Hospital confinement averaged one-half the number of days formerly needed for care.

Dr. James K. Stack, Chicago: I would like to mention two things: the first is simply this—that the application of early skin grafts to a large burned surface is not in any way insurance against contracture of that particular surface. If a child has a severe burn of the anterior surface of the neck or axilla, or the cubital space or popliteal space, it does not mean because that area is healed by skin graft that a flexion contracture of that area is going to be prevented, because contractures take place in tissue much deeper than the superficial area of the skin. However, it does mean that subsequent plastic work on this surface will be much easier.

I would like to ask the essayist to discuss Dr. Taylor's recent paper in the *Journal of the American Medical Association* about the harmful effects of tannic acid on first and second degree burns.

Dr. Henry N. Harkins, Chicago (closing): With regard to the presence of toxins it seems plausible to assume that in many cases in which toxemia has been given credit for causing illness or death in burns, the important factor is really sepsis, as Aldrich has pointed out. In the only fatal cases of burns seen at the University of Chicago, death was from sepsis and occurred seven to ten days after the burn. One of these cases died two days after developing a retropharyngeal abscess. At necropsy, a large 1 cm. diameter ulcer was found in the duodenum, about 5 cm. below the pylorus.

It had penetrated the mucosa and muscularis and fibrous tissue formed its base. It conformed to the diagnosis of Curling's ulcer first described by Long in 1840 and two years later by Curling and now called Curling's ulcer.

Favoring the use of saline dressings advocated by plastic surgeons, there is some evidence that tannic acid may interfere with the plastic results. However, in severe burns where the first thing is to bring the patient through the acute illness alive, the plastic result is of only secondary importance and tannic acid, whether it seals off the denuded area and prevents loss of fluid or minimizes the absorption of toxins is of prime value. In smaller burns where the patient is sure to live through the acute stage, saline dressings may be advantageous. As to the danger of using tannic acid on remnants of living skin, I have not observed the condition mentioned, but I do know that in my case with a very extensive second degree burn an eschar did form and when the latter was removed three weeks later the area was entirely covered by epithelium.

INTERPRETATION OF HILUS SHADOWS IN CHEST X-RAYS OF CHILDREN

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Osler once said: "More than any others, radiographers need the salutary lessons of the dead house to correct their visionary interpretations of shadows, particularly those radiating from the roots of the lungs." At the Children's Memorial Hospital during the past ten years post mortem films have been taken of the lungs.¹ At necropsy a careful comparison has been made of the pathology present on the post mortem films as well as on the films taken during life. It is from that experience that the material for this paper has been collected.

The interpretation of roentgenograms depends upon the character of the shadows present upon the film. One must take into consideration the degree of opacity and homogeneousness of the shadows, their position, configuration and extent, as well as their distinctness in outline and relationship to other shadows. Many pathologic changes give shadows of the some opaque-ness, etc., and their differentiation can only be obtained by consecutive films, by a knowledge of other laboratory data, and by the history, clinical study and physical examination.

In the interpretation of roentgenograms of the chest the hilar shadows and the linear mark-

¹Read before Section on Radiology of the Illinois State Medical Society, Springfield, May 19, 1936.

ings receive the greatest attention, because these areas show extremely wide variations, both when normal and when pathological changes are present.

The Hilum. The hilum is made up principally of blood vessels, bronchi, lymph nodes, pleura and of lung tissue. Changes in any of these structures will alter the size, shape and opacity of the hilar shadow.

By a comparison of roentgenograms of excised lungs taken before and after injection of the blood vessels and bronchi with an opaque material it has been found that a large portion of the hilum shadow is made up of blood vessels. These vessels, both arterial and venous, radiate out from the hilum to the periphery of the lungs both laterally and anteriorly and posteriorly. The blood vessels are larger in caliber than the bronchi and are represented by linear shadows of even density due to the fact that they contain blood which is moderately opaque to the x-rays. When these go anteriorly or posteriorly or when they branch in these directions they show up as circular or oval opaque shadows. They are often erroneously interpreted as lymph nodes, calcified areas, or as beading and studding of tubercles. It is characteristic that these blood vessel shadows have smooth borders and that they are larger and more numerous in the hilum and inner thirds of the lung fields and that they always occur along the linear markings, often changing in number and location upon successive films.

The bronchi are tubes filled with air which is non-opaque to the x-rays. As a result the bronchi appear on the roentgenograms as twin thin linear lines separated by a narrow space of decreased density. If the walls of the bronchi are thickened due to infection they will stand out as more noticeable shadows. They radiate out from the hilum as do the blood vessels, and the main bronchi to the various lobes are usually recognizable but they cannot be followed as far peripherally as the vessels. The bronchi that go anteriorly or posteriorly and those that branch in those directions show up on the film as circular or oval areas of decreased density, largest in the hilus and usually situated next to a similar circular area of increased density due to a blood vessel.

Lymph nodes are present in every hilum as well as along the course of the larger bronchi. They are largest in the hilum and become

smaller toward the lung periphery. Ordinarily the lymph nodes are not evident in a normal roentgenogram because although they are more opaque than the bronchi they do not produce enough contrast to the blood vessels to become visible. They may become visible if they enlarge sufficiently to extend beyond the hilum or mediastinum shadows. Accompanying this there may also be a pressure atelectasis of aerating tissue, inflammation of the node capsule and fibrous adhesions to adjacent structures so that the lymph nodes become visible by contrast to the lung tissue. Caseation in itself does cause lymph nodes to become visible unless the above conditions are also present but when they contain calcium they are easily recognizable.

There is also some air-bearing lung tissue between the hilum structures and, of course, surrounding it except at the root of the hilum. Because of its position this lung tissue is continually exposed to change. It may become consolidated due to pressure atelectasis of enlarged lymph nodes, or due to spreading infection from the lymph nodes or bronchi, or to direct pulmonary infection. Often permanent fibrosis occurs so that the hilum shadow will never return to its former density and likeness.

The mediastinal shadow must also be taken into consideration when interpreting a hilum shadow because it may undergo changes which not only influence the size, etc., of the hilum shadow but may be so related as to bear directly on a correct diagnosis.

The Normal Hilum. The right hilum is always more visible than the left because the left cardiac shadow overlaps the hilum on that side. Normally there is always a clear space between the lower right hilus and the right heart border which is of great importance in interpretation. As the hilar shadows are made up of a summation of the shadows of the blood vessels, bronchi, lymph nodes and lung tissue, they will vary greatly according to the patient's age because of the scars of various previous infections after the healing of which the structures do not return completely to their previous state. It is for this reason that it is impossible to give a description of a normal hilum that will include all of the variations of normal. In other orders, a normal hilum shadow in a child is different from one seen in older children or young adults and aged people.

The blood vessels themselves undergo slight if any changes during childhood. This is not true of the bronchi and lymph nodes which are affected many times during the frequent respiratory infections of childhood, and especially by measles and pertussis. As a result there may remain a thickening of the bronchial walls causing an increase of opacity. The lymph nodes may become permanently scarred, enlarged and more opaque with thickening and fibrosis of the capsule as well as fibrous adhesions to the adjacent structure. The surrounding pulmonary tissue may undergo atelectasis or fibrosis so that the hilum becomes larger and more opaque.

The normal hilum shadow is situated at the root of the lung and from it radiate large prominent linear shadows going into each lobe of the lung. These are usually heavier to the lower lobes which gives the hilum its largest dimension up and down rather than laterally. The shadow cast is not a homogeneous one but is made up of areas of various degrees of opacity containing in many instances one or more circular areas of increased and decreased density singly or next to each other which are due to vessels and bronchi. The left hilum seems to extend further laterally than the right. The most opaque part of the shadow is usually not against the heart or spinal column but slightly out from it so that especially on the right side there is a clear space between the hilum and the heart border. It is in the appreciation of the degree of the linear shadows and the amount and extent of opacity between them and the extent of the opacity into the lung fields that one arrives at the differentiation between the normal and the pathological changes. If the radiating trunk shadows are evenly distributed to all parts of the lung though they may seem overly large and dense and if the areas between them are relatively clear with no loss of the clear space between the hilum and cardiac border usually a normal hilum is present.

The Hilum of Tuberculosis. Childhood tuberculosis involves not only the pulmonary tissue but there is almost a simultaneous invasion of the draining lymph nodes along the bronchi, and of the hilum and mediastinal lymph nodes. The enlargement of those nodes, with caseation, fibrosis and adhesions and atelectasis of the surrounding lung tissue leads to the formation of a hilum shadow which is fairly char-

acteristic of tuberculosis. The hilar shadow is usually triangular with the base superimposed on the median shadow and the apex reaching into the pulmonary field. This shadow is usually homogenous and fairly regular in outline with definite borders which have a fuzzy appearance. If involving the right side there is a loss of the clear space normally seen between the hilum and cardiac border. If healing is taking place calcification in the hilum may be present or there may be strand-like fibrous bands extending out from it. If there is involvement of the mediastinal lymph nodes, there will be an increase in the width of the mediastinal shadow on that side, which may be represented by a bulging shadow with a fairly definite outline or a straight one with a fuzzy border. The borders of these shadows are not sharply smooth because they are made up of an inflammatory mass with fibrous adhesions between the pleura, pericardium, etc. This serves as a differential point when considering non-inflammatory enlargements.

A calcified area casts a definite shadow which is usually easily recognized. When present in and about the hilum it practically always is of a healing or healed tuberculosis lymph node. It is represented by an area of increased density usually irregular in outline, sharply demarcated from the surrounding shadows and visible even when beneath a rib. At an early age it is rarely a solid shadow, but presents a mottled, flecked or laminated appearance. In children up to ten years of age, it is usually not a perfectly round, circumscribed shadow of even density but contains areas of unequal density in contrast to vascular trunks which are often multiple, largest near the hilum and which are of even density with regularly smooth margins.

Non-Inflammatory Hilum Enlargement. Enlargement of the hilum or mediastinum due to non-inflammatory pathology is not uncommon in children. Conditions frequently encountered are enlargement of the thymus, Hodgkin's disease, leukemia and malignant tumors. The width of the mediastinal shadow may vary in size, depending upon the phase of respiration which affects the height of the diaphragm.

The thymus shadow when present is usually bilateral with convex smooth borders. It extends downward from the clavicles and appears to cap or overlap the heart shadow. When the

width of the mediastinal shadow is greater than twice that of the spine one can assume that it is not within normal limits.

Tumors occurring in the hilum or mediastinum are usually due to metastasis but primary tumors may occur. The ones we have seen were very large, producing rounded shadows of fairly homogenous density which seemed to bulge into or encroach upon the pulmonary fields from the hilum and mediastinum. The borders are generally smooth, convex and unilateral. Only one such shadow may be present but often several similar rounded areas are seen which seem to overlap each other producing a scalloped appearance. When the pulmonary tissue is also involved shadows similar to bronchopneumonia are present.

In lymphosarcoma, Hodgkin's disease and leukemia the hilum and mediastinal lymph nodes practically always become enlarged either unilaterally or bilaterally. Such enlargement will be represented by rounded shadows with smooth borders which extend out into the pulmonary fields from the median shadows. Only a single shadow may be present or several next to each other or overlapping. The shadow is not as large as that present when a tumor is present.

Changes in Hilum Due to Infection. Practically all acute infections of the lower respiratory tract from the bronchitis of the ordinary cold to measles and pertussis show changes in the hilar shadows. There is always some generalized increase in the linear markings involving all the lung fields. With this there is, of course, an accentuation of the trunk shadows in the hilum with an increase of the hilar shadow due to enlargement of the lymph nodes and pressure atelectasis as well as pneumonic consolidation of the lung tissue in these areas. The enlargement is often not regular in outline and may extend more into one lobe of the lung than the others. The area of increased density is mottled due to differences in degrees of opacity and the base is widened and merges irregularly with the median shadow. The lateral margins are also irregular and mottled, fading into the normal pulmonary shadows. There may be an associated bronchopneumonia involving one or more lobes of the lung. It is often impossible to differentiate the above described hilus enlargement from a central pneumonia, tuberculosis, etc., except by consecutive films.

Often a central pneumonia will start in or about the hilum and will be represented by a shadow of fairly even density extending a variable distance into the pulmonary field obliterating the outlines of the hilum shadow itself. The extent of this shadow will depend upon the age of the pneumonic process; if early then it can on subsequent films be seen extending out toward the periphery of the lung.

In chronic infections such as those originating from chronic sinus disease, which is common in childhood, there is a marked increase in the size and density of the trunk shadows radiating out from the hilum. This gives a marked increase in the size of the hilum shadow because in and about the hilum between the trunk shadows the normal fine pulmonary markings are obliterated or increased by the infection so that the normal density of the lung tissue in this region is lost. The density of this type of hilum shadow is not homogeneous but varies due to the heavy bronchial shadows, especially to the lower and upper lobes.

Pronounced changes take place in the hilum shadow when a bronchiectasis is present. The hilum shadow is not only increased in density but is also enlarged with heavy linear markings extending into the involved lung, usually a lower lobe. The linear markings are accentuated because of the thickening of the bronchial walls and infection of the air-bearing tissue adjacent to them. Small areas of decreased density due to sacculations are usually visible, as well as a widening of the linear lines of decreased density demarcating the enlarged bronchial lumen. With this there is hyperplasia of the regional lymph nodes and varying degrees of consolidation of some of the surrounding lung tissue. There is usually some loss of the normal clear space between the hilum and the cardiac shadow. The heart is usually pulled to the affected side.

Emphysema of the lung as found in asthma may produce a decrease of the density of the hilum shadow due to the increase of air in the alveoli. The emphysematous lung may also extend well over part of the mediastinal shadow producing there an overlying visible area of decreased density.

If there is complete collapse of one lobe of the lung this mass will be drawn medially against the hilus where it will show as a dense

shadow of homogeneous density with smooth regular borders.

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DISCUSSION

Dr. O. N. Lindberg, Decatur: The interpretation of hilum shadows has been a frequent source of confusion and its significance often overemphasized. The reason is clearly that in the hilum zones the markings and width of the root lung structures vary with age, individuals and the number and severity of previous infections. While, as Bigler has stated, the normal hilum may not be defined, its general outline roughly corresponds to a butterfly type of structure presenting cornua from which radiate the bronchovascular trunks to the upper and lower parenchymal fields. In the abnormal hilum shadow there is loss of this contour and the recession between the cornua presents a homogeneous type of density which reaches into the middle zone. When the only apparent deviation from normal concerns the width of the hilum structures, a diagnosis of a clinically significant lesion is seldom justified. On the other hand if the hilum shadow appears "wide and soft" the inner zone parenchyma is quite probably involved in a bronchopneumonic process, although, here again it is well to remember that, in children especially, non-tuberculous infections involving the lung root are more common than tuberculous lesions involving the structures adjacent to the tracheobronchial lymph node areas, and to which the term "tracheobronchial tuberculosis" is more accurately descriptive than the more obsolete designation of hilum tuberculosis. It should be considered that tuberculous lesions of the childhood type are more definitely tracheobronchial than hilum, per se, or with true parenchymal involvements which are usually basal, or combined lesions.

Joseph K. Calvin (Chicago): I am just going to say a few words about this subject from a pediatric standpoint. I shall not go into the technique of the roentgenological aspect. I do not know whether you realize how much work Dr. Bigler has put into this sort of research. Considering the short time of his presentation and the resume he gave you, it looks as though it were a few days of work. This was accomplished only after years of following cases clinically and studying x-rays taken before and after autopsies.

I was a Cook County intern and resident in pediatrics in the days before Dr. Bigler's work, and inasmuch as chest plates are a very important part of pediatric roentgenology, I was much interested in the subject. We would frequently get reports back such as calcification in the hilus, increased hilus shadows, hilus tuberculosis, enlarged hilus glands, etc. In going back over the reports of those days, one finds the majority of reports were of that nature, particularly calcification. Calcification being more or less pathognomonic of tuberculosis in childhood, naturally the diagnosis of tuberculosis had to be made. We had to accept them because we did not know better.

Since Dr. Bigler's work there has been a distinct change in the x-ray reports at the County Hospital. I am now on the attending staff and have thus had an opportunity to see the same type of chest x-rays and same underlying pathology. We now get a great many x-ray reports of healthy chests. We realize the so-called areas of calcification were really blood vessels looked at obliquely.

Areas of calcification in contradistinction to blood vessels looked at on end, are not homogeneous, round or oval shadows. The outline is irregular. They vary in density. The blood vessel shadows shift in subsequent x-rays because the rays do not catch the same vessel at the same angle each time. The calcified shadows always persist in the same areas on subsequent films, and are considerably more dense. Even if a rib is superimposed on them, the shadow still definitely shows through.

Dr. Bigler mentioned the fact that it takes a pretty large hilus gland to be diagnosed roentgenologically. You can have considerable enlargement of the hilus glands without showing on the x-ray. When one makes a diagnosis of hilus gland enlargement it must be realized that it is a pretty large gland in order to project beyond the normal hilus, and that most of the shadows in the hilus are due to blood vessels and bronchi, with possible peribronchial infiltration when inflammatory processes are present.

Dr. Bigler has emphasized the fact that the primary tuberculous lesions are distinctly unilateral or asymmetrical. In bronchial asthma or in pictures obtained following measles and whooping cough or other upper respiratory infections, there is increased hilus density due to peri-bronchial reactions and later fibrosis, but always bilateral, as the infection is diffusely symmetrical, unless a localized pneumonitis is present. In tuberculosis practically always the lesions are unilateral. With a unilateral picture of that sort extending out from the hilus, one has to make the diagnosis between pneumonia or tuberculosis by additional data. The clinical course helps to distinguish them, as does the positive Mantoux reaction in primary childhood tuberculosis.

Without calcification in these unilateral enlargements I do not think one could show that it was tuberculosis any more than pneumonia in a single film, unless positive tuberculosis skin reactions were present, and a lack of leukocytosis or high fever, etc. Subsequent x-rays in a week or two would show the enlarged unilateral shadow of pneumonia resolving, but a tuberculous lesion unchanged.

Realizing these distinct changes in the roentgenological interpretation, these hilus shadows are now more or less an open book, where before they were nothing more than confusion. I can definitely say that change has taken place following Dr. Bigler's investigations.

H. E. Irish (Chicago): Dr. Bigler did not mention one phase of hilus differential shadows that seemed to be worth while. During the last winter we have been seeing about one hundred cases of pneumonia a month in infants under a year. In many of those there have been symptoms of pneumonia with physical signs either absent or else only suggestive in nature. We take

x-ray pictures of these chests routinely and find that we get considerable help from the x-ray picture in the early diagnosis of central pneumonia. The detail appears has a small center spot or area of opacity surrounded by a rounded area of density and corresponds, I believe, to the bronchus, rayed in the long diameter surrounded by the early infiltration of pneumonia immediately surrounding, in other words a peribronchial pneumonia. It appears in the skiagram in what looks like bird's eyes, a little round pupil with an iris of greater density. They occur not very numerous but one may see as many as half a dozen on a side. By watching those areas serially the subsequent pictures usually show extension of the infiltration, usually into one of the lobes of the lungs, a localization peripheral later. This early hilus detail is of very great usefulness in making differential diagnosis in early central pneumonia.

I presume some of the men who deal with x-rays have noticed this before but I can say it is well worth looking for and has been of very great use to us in diagnosing early stages of bronchopneumonia.

Dr. John A. Bigler, Highland Park (in closing) : As Dr. Irish said, the roentgenograms of the chest are of considerable help in diagnosing the presence of an inflammatory process. Bronchial pneumonias may start any place in the chest, the periphery area, pulmonary regions or in the hilus. If the pulmonary tissue is beginning to show opaque shadows one knows some pathology is present. If these shadows between the linear trunk markings extend into the pulmonary fields from the hilus, there is unquestionably an inflammatory process present.

KETOSIS IN THE TREATMENT OF EPILEPSY

Effects of Diacetone Alcohol on Institutional Epileptics

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Following the reports of the successful utilization of the ketogenic diet in the treatment of epilepsy an elucidation of its *modus operandi* has become important. Among the questions to be answered are the following:

1. Is the acidosis accompanying the diet of chief significance?
2. Is the dehydration following the use of the diet the factor involved?

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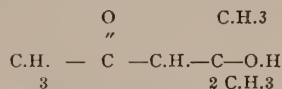
Aided by a grant from the Minnie Frances Kleman Memorial Fund.

3. Is the loss of fixed base, particularly that of potassium, that follows fasting¹ of importance in the control of the seizures?
4. Is it the anesthetic property² of the ketone bodies that causes a diminution in the frequency and severity of the seizure?

In the experiments reported below we have attempted to find an answer to the last question.

Keith³ has concluded from experiments on rabbits that aceto-acetic acid and its sodium salt and diacetone alcohol have each a pronounced effect in preventing thujone convulsions. The fact that the neutral salt sodium aceto acetate is anticonvulsant shows that it is not due to acid properties of the drug. The anticonvulsive properties depend on the acetone portion of the molecule.³

We used diacetone alcohol in our experiments. This substance has the structural formula.



Method: Eleven epileptic patients of whom three were males, were given the diacetone alcohol treatment. They had a history of convulsive seizures for twelve to forty-six years. Their ages ranged from twenty-one to fifty-two years and they had been hospitalized from three to thirteen years. Prior to the present study they had been treated with phenobarbital and at times with sodium bromide. They were given two to six drams of diacetone alcohol daily. The dose varied according to the known severity and frequency of the convulsions and the reaction of the patient to the drug. The patients were observed daily for frequency and character of the convulsions, behavior and gastrointestinal disturbances. Blood pressure, pulse rate and respirations were determined frequently. At weekly or biweekly intervals, laboratory tests were made which included complete blood counts, hemoglobin determinations, blood sugar and non-protein nitrogen. Frequent urinalyses were made.

The drug had to be discontinued on the third day in one case because of severe vomiting. The patient had received two drams of diacetone alcohol daily. She was taken off the treatment. The drug was discontinued in another patient on the twelfth day because she refused to take it and had three convulsions on that day.

The remaining patients who tolerated the

medicine were under treatment for forty to fifty days and then were observed during a period of twenty-five days when they received no medication at all. After this period, treatment was resumed for about fifty days.

Results: Diacetone alcohol is not anticonvulsant in institutional epilepsy. Most of our patients had from one to ten convulsions a month. Phenobarbital in doses of 1½ to 4½ grains daily rendered five of the patients free of convulsive seizures. In these patients diacetone alcohol was not effective. The remaining patients continued to have seizures when on phenobarbital and also during the period of diacetone alcohol treatment. The frequency and severity of the convulsive seizures in these patients were slightly greater during the twenty-five day period when they received no medication at all, than during the period of treatment. We thought, however, that there was no significant difference in view of the fact that rather severe seizures continued to occur during treatment.

One of the patients died in status epilepticus one week after completion of the diacetone alcohol treatment. She had been on phenobarbital during the week prior to death. This patient had a history of frequent periods of status epilepticus during her stay in the institution. Unfortunately we did not have permission for a postmortem examination to determine whether death was related to the previous treatment with diacetone alcohol. The fact that she died a week after treatment had been discontinued and her history of previous periods of status would indicate that her death was probably not due to the administration of the drug.

The urine in seven patients was positive for acetone and there was no correlation between the number or severity of the seizures and the acetone reaction in the urine. There were no changes in pulse rate, blood pressure, respiration, cellular constituents of the blood, hemoglobin and non-protein nitrogen. The blood sugar, however, was increased in four patients and lowered in one as shown in Table 1. We used the Benedict⁴ modification of the Folin—Wu method. The normal values by this method lie between 70-100 Mg. per 100 c.c. of blood. It will be noted that all of the patients tested except one (90) had blood sugar levels below or at the lower limits of normal. In cases 1, 2, 7 and 8 there was a significant increase in blood

sugar after the diacetone alcohol treatment. All of these patients had acetone in the urine.

In order to ascertain the relation of the administration of diacetone alcohol to blood sugar we investigated the problem in a series of six rabbits. After a sample of blood was withdrawn by heart puncture, 0.3 c.c. per kilogram of diacetone alcohol was injected in the marginal ear vein and blood samples were removed by heart puncture at fifteen minute intervals for a half hour and then at half hour intervals, until six or seven samples were obtained. (We had previously found that 0.5 c.c. per kilogram caused profound stupor confirming the results of Walton, Kehr and Loevenhart⁵). On previous days similar procedures were carried out on each of these rabbits; on one day withdrawing blood samples after the intravenous injections of normal saline and on another day withdrawing the samples when nothing at all had been injected.

TABLE 1.
CHANGES IN BLOOD SUGAR AFTER THIRD WEEK OF TREATMENT WITH DIACETONE ALCOHOL

Case	Before Treatment	After Treatment
	(Blood Sugar in Mg. per 100 cc.)	(Blood Sugar in Mg. per 100 cc.)
1.....	72.72	110.49
2.....	59.1	101.52
3.....	83.33	80.6
4.....	90.09	75.0
5.....	78.50	80.0
6.....	85.10	86.58
7.....	60.10	93.02
8.....	62.50	81.63
9.....	72.72	75.47
10.....	67.12	64.51

TABLE 2.
BLOOD SUGAR AFTER INJECTION OF DIACETONE ALCOHOL. RABBIT No. 2 (3 Kg.)

Time	Blood Sugar Mg. per 100 c.c. of blood	
8:45 A. M.	133.3	
8:50 A. M.	0.9 c.c. diacetone alcohol injected intravenously.	
9:05 A. M.	137.9	
9:20 A. M.	133.3	
9:50 A. M.	134.3	
10:20 A. M.	134.2	
10:50 A. M.	148.1	
11:20 A. M.	160.	
11:50 A. M.	200.0	

TABLE 3.
BLOOD SUGAR OF RABBIT No. 2, ON DAY BEFORE INJECTION OF DIACETONE ALCOHOL

Time	Blood Sugar Mg. per 100 c.c. blood	
10:10 A. M.	137.9	
10:25 A. M.	133.3	
10:40 A. M.	132.4	
11:20 A. M.	132.4	
11:50 A. M.	132.4	

The three series of blood sugars in each rabbit were compared and it was found that diacetone alcohol caused a definite rise in blood sugar which did not occur after saline injections or after no injections. Female rabbits, one of whom was pregnant, were found to be unreliable for these experiments as the blood sugar would vary considerably even when no medication was administered. With the exception of the female rabbits, the blood sugar varies very little for a period of two hours after saline injection or under no medication. The average change in blood sugar after the administration of diacetone alcohol was from a basal level of 113.3 to 169.0. There was a steady rise in blood sugar the peak occurring two hours after the injection. After that there was a tendency for the blood sugar to return to the basal level. An experiment in which there was a high basal blood sugar and in which the increase due to diacetone alcohol did not return to the basal level is chartered below. (Table 2). This is to be compared with the normal blood sugar levels. (Table 3.)

Comment: Our findings indicate definitely that diacetone alcohol is of no value in the treatment of epilepsy. This is opposite to Keith's³ findings of the unquestionable anticonvulsive properties of diacetone alcohol in thujone convulsions of rabbits. In the rabbit experiments, however, the concentration of the acetone body in the blood is probably at its greatest when a thujone convulsion is about to "break through." This is possible in experimentally induced convulsions where the anticonvulsant and the convulsant drugs can be administered within a short time of each other. In human epilepsy the concentration of the ketone body might be insufficient at the time a convulsive seizure is imminent due to the rapid excretion of the ketones. This is analagous to the conditions present in the bromide treatment of epilepsy. A definite blood bromide level for each individual epileptic is required to prevent seizures⁶. It is possible that the ketogenic diet is more efficacious in maintaining a definite ketone level in the blood than with the administration of ketone bodies as such.

An argument against our conclusion, which is based on treatment of institutional epileptics may be cited in the work of Notkin⁷ who reported that the ketogenic diet is of no value in institutionalized epilepsy. However, if the ef-

fect of the ketogenic diet were due to the sedative properties of the ketones, it would seem to be a clumsy, complex, uncomfortable and uncontrollable method to obtain sedation when the use of bromides with the simple control by the blood bromide level yields good results.⁶

It seems to us, however, that the good results obtained with the ketogenic diet in children is due to the fact that responses of the body to the diet are similar to those in fasting though not to as great an extent. During fasting as well as during a strongly ketogenic diet^{1, 8} there is a loss of intracellular water and fixed base incident to the excretion of excessive amounts of acid formed. Gamble, Ross and Tisdall¹ state that the cells give up potassium when either protein or glycogen is destroyed. By this means the proportion of water and salts to solids in the cell could be kept relatively constant. The failure of the ketogenic diet in certain patients is due to the fact that the degree of acidosis which results from ketosis will depend not only upon the quantitative production of ketones, but also upon the rate at which they are excreted, the amount of base which is available for their neutralization and the efficiency of the factors involved in the maintenance of neutrality, especially the ability to substitute ammonia for fixed base.

That ketosis in itself is not sufficient to prevent convulsions is brought out by McQuarrie⁸ who found that a marked increase in ketosis did not have any anticonvulsive effect in the presence of alkalosis. He has also found that a non-ketogenic diet with a high content of acid forming elements did not have any inhibitory influence on the convulsions. Although Talbot, Metcalf and Moriarty⁹ attribute the beneficial effects of fasting or the ketogenic diet to acidosis the production of ketone bodies being of minor importance, Peterman¹⁰ in 1925, said that acidosis or ketosis alone do not control the convulsions and that ketosis and acidosis should be distinguished. Only during ketosis and acidosis an inhibitory effect on the convulsions occurs and this may be due to the similarity of the effects observed in starvation with the resulting excretion of fixed base. The shifting of potassium and intracellular water across the cell membrane may be the mechanism involved in the inhibition of convulsions.

We noted that the basal blood sugar level in

our patients was below that or at the lower limits of normal. This is in agreement with the reports of many observers. Tyson, Otis and Joyce,¹¹ found sub-normal fasting blood sugar levels in 56.4% of a group of 92 epileptics as compared with only 12.5% of the non-epileptic control group. They found a correlation between the abnormal glucose tolerance and the frequency of seizures experienced by these patients both during the test and during the patient's institutional life. Nielsen,¹² in a series of 58 consecutive dextrose tolerance curves showed that periodic or constant low blood sugar occurs in about 90% of epileptic persons during a dextrose tolerance test. He also finds in a series of 182 consecutive dextrose tolerance tests on various clinical entities that idiopathic epilepsy seems nearly confined to persons with a tendency to hypoglycemia.

The administration of diacetone alcohol caused a rise in blood sugar in four of our patients. The causal relation of the hyperglycemia to the administration of diacetone alcohol was confirmed by experiments on rabbits. The mechanism involved is probably an inhibition of insulin secretion. The patients were on the regular institutional diet with sufficient carbohydrate. There was thus sufficient glucose available for an increased mobilization of glucose to oxidize the ketone body according to the principle that the acetone bodies require glucose for complete oxidation. Nevertheless, there was a considerable excretion of acetone in the urine of these patients in the presence of a hyperglycemia. This indicates a suppression of insulin activity. The finding of hyperglycemia after diacetone alcohol medication is opposite to the state of the blood sugar level during the administration of the ketogenic diet. During the ketogenic diet associated with acetone production there is a diminution of the amount of sugar found in the blood.³ The explanation of the difference in the blood sugar concentration during the ketogenic diet and during treatment with diacetone alcohol is obviously based on the fact that with the ketogenic diet there is very little carbohydrate available, whereas the diacetone alcohol treatment was accompanied by the usual diet with sufficient carbohydrate.

The suppression of insulin action by diacetone alcohol is of interest in relation to epilepsy in view of the reports of Harris¹³ of hyperin-

sulinism and the resulting hypoglycemia that is associated with convulsions similar to epileptiform seizures. It is also of interest to ascertain the relation that the inhibition of insulin activity by diacetone alcohol has on the prevention of thujone convulsions.

SUMMARY

In order to determine whether the acetone bodies developed in the course of the ketogenic diet are the factors that inhibit epileptic convulsions, we treated eleven institutional epileptic patients with diacetone alcohol. The anticonvulsant properties of this drug were demonstrated by the experiments of Keith. Two to six drams of the drug were given daily during two periods of treatment. The first period was from forty to fifty days and the last period was fifty days. There was an intervening period of twenty-five days during which no medication was given. It was found that diacetone alcohol was not anticonvulsant in institutional epileptics. The urine in seven patients was positive for acetone and there was no correlation between the number and severity of the seizures and the acetone reaction in the urine. The blood sugar was increased in four patients and lowered in one. Diacetone alcohol was injected intravenously into six rabbits in order to ascertain the relation of this drug to blood sugar. It was found that there was a definite increase in the blood sugar level following the administration of this drug.

The reason for the discrepancy in the action of diacetone alcohol in human epilepsy in which it is not efficacious and in the thujone convulsions in rabbits where it is definitely anti-convulsant is probably due to a failure of obtaining a sufficiently high ketone blood level in human epilepsy at the time a convulsive seizure is imminent. The ketogenic diet may be more efficacious in maintaining a high ketone blood level than the administration of the ketone bodies as such. However, it is more likely that the results obtained with the ketogenic diet are due to the shifting of intracellular fluid and potassium across the cell membrane that accompanies a strongly ketogenic diet.

The rise in blood sugar caused by diacetone alcohol is due to an inhibition of insulin activity which this drug probably causes.

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DISCUSSION

Dr. T. T. Stone, Chicago: I think at this time it would be extremely practical if we inventory rather briefly the story of the convulsive state in discussing this particular type of research in epilepsy. As you all know, when any disease or symptom is periodic in nature, any type of therapy leveled at that particular disease or symptom is rather difficult to evaluate.

It would be interesting to discuss briefly what we understand by epilepsy. What is epilepsy, the pathogenesis particularly? It has been thought for many years that epilepsy is probably due to an abnormal process in the brain. It has also been thought to be due to some altered metabolism of constitutional origin manifesting itself by humoral instability, which means a lowered threshold for convulsions.

In this discussion I will confine myself to the latter aspect of the problem, because I do not think Dr. Finkelman had in mind any question of organic brain disease.

For many years it has been impossible to determine what this humoral factor is or was. In the past twenty years there have been great advances in the laboratory relating to physiological, chemical and biological processes. At this time one may review the various types of treatment that have been leveled at epilepsy in the years that epilepsy has been known. They are: Sedatives such as sodium bromide and luminal, lowered salt in the diet, a lowered protein diet, a ketogenic diet, chemical ketosis, acidosis, dehydration, inanition, and potassium boro-tartrate. This discussion will be confined to that of the ketosis.

What is a ketosis? A ketosis is a state of the organism in which one finds incomplete fat metabolism associated with the production of ketone bodies such as acetone, diacetic acid and B-oxybutyric acid. Further, there is a definite acid-base change so that the potassium ion within the cell has decreased in amount and the chloride ion outside of the cell has increased. There also results a state of acidosis in which examination of the blood has proved it to be not more acid but less alkaline than normally.

When does acidosis occur? Acidosis most commonly occurs in diabetes mellitus. You can produce it by starving yourself. You can produce it by severe exercise. You can get it in infections and in ether anesthesia.

What is it supposed to do? Ketosis is supposed to diminish or arrest convulsive seizures in adults and children. It is supposed to do it by one of several methods. I, personally, do not know how it does it. It is supposed to be due, possibly, to either the specific acetone effect or the effect of diacetic acid on the nervous cells. It may be due to the production of an acidosis, and it may be due to the change in the Ph or the acid-base, and finally—and I believe this last reason may have some basis for future work—dehydration.

What suggested the utilization of a ketogenic regime in the treatment of epilepsy? Everybody knows that in true diabetes mellitus, in which ketone bodies are found in large quantities, one very rarely, if ever, sees epilepsy. Joslyn, in 5091 cases of true diabetes, did not observe a case of co-existing epilepsy on even one occasion.

It was thought that this being the case it would be ideal for the treatment of epilepsy to adopt those bodies or those substances found in diabetic states, and that explains the use of ketone bodies.

As Dr. Finkelman said, it is impossible to use acetone or diacetic acid or B-oxybutyric acid because of their strength and unfavorable reaction on the human body.

In summing up, let me say in our experience, existing over a period of eight years with the ketogenic diet in adults, we have found it to be of practically no assistance. We have not been able to arrest convulsive seizures completely in any adult patient by the giving of a ketogenic diet alone.

I am not at all surprised to hear today that the use of diacetone alcohol in convulsions occurring in adult institutional epileptics has been found to be of no value. If some sedative is given in conjunction with the ketogenic diet, one is unable to designate this as a critical experiment.

The present treatment, in my estimation, of cryptogenic or genuine epilepsy should be that of giving intelligently, properly and constantly, over a period of three or four years, some sedative like sodium bromide or luminal. There should be a careful re-investigation and re-examination every two to three months to determine whether that patient is getting sufficient medication to keep him convulsion-free, and if not, the sedative increased to such an amount as to result in a convulsion-free period. If, at the end of three or four

years following the last convulsion, the patient has no spells, I think one can say that that patient is cured.

Do not misunderstand me. I do not think one can cure cryptogenic or idiopathic epilepsy, but for our purposes of relation to the laymen, if you can keep them free from all seizures for three or four years after the last convulsion, you may then take them off all medication.

Patients who have epilepsy should be forbidden from driving cars, swimming or climbing to any heights. They should be allowed to participate in all forms of exercise except those that require an unusual amount of exertion. They should refrain from marriage.

Dr. Isidore Finkelman, Elgin (in closing): I just wish to say a few words. The paper seemed to be of such technical interest that the general practitioner goes away without, perhaps, any value with the exception of the very practical points brought out by Dr. Stone.

I wish to add that the last statement Dr. Stone made is very applicable to the story that Temple Fay told in Kansas City at a meeting of the Society for the Study of Epilepsy. As he was driving along to Kansas City, another man drove by and almost ran him in the ditch. Miraculously Temple Fay escaped. He looked at the driver who was driving that way and thought he had a mild epileptic spell. His eyes rolled up and he had a blank facial expression and he had all the other signs of an epileptic spell.

I wish to add that I think it is rather important for your epileptic patients to be active, to have exercise. Do not tell your epileptics to rest. If they are not occupied with anything they will have more convulsions.

Another practical point is that when you give your patients bromides it is a wise thing to add Fowler's solution, one to two minims in each dose. This counteracts some of the toxic effects of the bromides.

Question: Do you give diacetone alcohol intravenously?

Dr. Finkelman: by mouth.

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EPIDEMIC RESPIRATORY DISEASES IN EARLY LIFE

A Clinical Study. Preliminary Report

SCOTT J. WILKINSON, M. D.

DECATUR, ILLINOIS

The definition of the term epidemic respiratory disease, as used here, is of more theoretical than practical importance. In conformity with common usage, the diagnosis has been applied to those infections, prevalent during cold weather, with primary or predominant localization in the upper respiratory tract. Current opinion among investigators attributes these diseases to the pathogenic action of a virus, such as cold or in-

fluenza, generally associated with ordinary bacteria implicated as secondary invaders. The latter, H. influenza, streptococci and pneumococci, for example, are held responsible for the frequent complications of acute respiratory diseases. In the illness of the individual patient, clinical recognition of the presence and type of virus, and potential or actual secondary invader, is generally impossible. The variable and puzzling behavior of patients with respiratory disease during different epidemics, as well as the individual variations in the same epidemic, prompted the clinical study reported here. The very fact that influenza can ordinarily be identified and diagnosed with certainty only in epidemic outbreaks is sufficient reason for a group study of the epidemic features of acute respiratory diseases. The acknowledged importance of these diseases as a cause of illness and disability at all ages needs no emphasis, although the greater frequency and increased severity of these infections during early years makes the problem particularly significant in pediatric practice. From the viewpoint of relative importance to other diseases, it is interesting to compare the observed incidence of certain contagious diseases to acute respiratory infections. During the five year period reviewed here, the number of children treated showed the following ratio of diseases:

Scarlet Fever	1
Measles	10
Pertussis	20
Epidemic Respiratory	165

The material for the present study of epidemic respiratory diseases in early life was obtained from case histories of private patients for the years 1931 to 1935, inclusive. During this period satisfactory records were available in 475 children for a total of 827 illnesses diagnosed acute respiratory infection. The data studied included age at onset, complaints, usually as given by the parent, physical findings, duration of illness, and complications. These findings were tabulated chronologically for the five year period. The average findings over this time should be typical of acute respiratory disease in infants and children for this locality. Since the cases studied are a selective group, the method is distinctly one of "sampling." The data in regard to severity of attacks and incidence of complications are probably more favorable than would be found in the entire community, since private patients as

a group are undoubtedly attended more closely by families better able to provide for their children. The present data obviously is not a continuous nor inclusive record of all respiratory infections in these patients, since milder attacks unquestionably are never seen, and the composition of the group to a certain extent is constantly changing. For various reasons the available cases are also heavily weighed towards the earliest age period. The epidemic character of the recorded illnesses is naturally influenced by the size of the community involved, a city of approximately 60,000.

The epidemic type and distribution of respiratory diseases noted during the five year period are illustrated by the accompanying chart where cases have been plotted by monthly totals. (Chart 1.) Graphically there appears a rather constant low level of cases throughout the curve. Cases within this continuous level have been arbitrarily separated on the graph as "endemic" disease, in contrast to groupings above the line representing various epidemics. Practically, there are no distinctions for these so-called "endemic" cases and they have been included with the epidemic group in later studies. With this chronological graph of the present group of cases, another graph of obvious significance has been included. The upper curve represents generalized influenza epidemics recorded by the U. S. Public Health Service from 1931 to August, 1935.¹ This curve, derived from excess mortality rates from influenza and pneumonia over normal expectancy, has been copied here as an average of the curves reported for the East and West North Central States, the section of this study. The two curves have been drawn in approximate proportions for maximum peaks. The chronological correspondence of certain peaks in the two curves, together with the relative similarity of these peaks, clearly indicate that these particular epidemics in infants and children were influenzal infections, or diseases initiated by epidemic influenza. For later study these epidemics have been numbered influenza 1, 2, 3 and 4. Ideal data for study of epidemic respiratory disease should provide a similar explanation for each individual epidemic. Although this is not possible with the present group, attention is directed

to one other group of epidemics which occur during the months of July to October, inclusive. These epidemics, indicated on the chart by vertical shadings, involve diseases distinctly different from the winter type. These differences will be pointed out later with the clinical data recorded for the various epidemics.

Before considering the average features of these respiratory diseases and the individual variability of these features in different epidemics, certain general trends of these illnesses in early life are worth noting. Reference was made to the fact that respiratory infections at this age are much more severe than in later life. This relative severity is partially indicated by the degree of fever, although elevations of temperature are more extreme in early life. For all attacks the average recorded temperature ranged up to 102 degrees in 63% of the patients, over 102 in 37%. Since four hour temperature records were exceptional, the percentage over 102 is probably underestimated.

The severity of these illnesses is also reflected in the following figures for average duration of illness in all attacks during the five year period:

Duration 1 to 3 days	26%
Duration 3 to 7 days	35%
Duration over 7 days	39%

Since the uncomplicated cold and attack of influenza is considered to be an illness of approximately three days' duration, it appears that about 75% of this group had a more serious or complicated disease. The effects of these severe infections of early life are indicated by the number of complications. The five year average for this group showed:

Otitis Media	5.9 %
Adenitis	2.9 %
Pneumonia	4.2 %
All others	1— %

Total..... 14—%

It will be noted later that different epidemics have marked variations, both as to incidence and type of complications. The present percentages, if anything, underestimate complications, since questionable or mild disease, such as otitis media not progressing to drainage, relatively minor degrees of cervical adenitis, and doubtful pulmonary involvement have not been included as complications. Clinical experience with pulmonary complications, during epidemics especially, shows that many cases, not diagnosed in

1. Influenza and Pneumonia Mortality in a Group of about 95 cities in the United States during four minor epidemics, 1930—1935. Collins, S. D., and Gover, M.: Public Health Reports 50: 1668-1689, Nov. 29, 1935.

the absence of unnecessary x-ray study, have changes in the lungs with insufficient physical signs to justify a clinical diagnosis of bronchopulmonary disease. While figures for comparison with older ages are not available, clinical experience with epidemic illness in the families of these children uniformly reveal more serious illnesses in the early age group. In respect to age, however, the present group also illustrates an-

fection should be at a minimum. While this is comparatively true, isolation alone would appear to be an inadequate explanation for the absence of disease, since epidemic influenza of all ages appearing simultaneously in all parts of the country involved the present group. This speaks for a diversity of infection so extensive both as to locality and age that escape from exposure of any age group seems most unlikely. The second

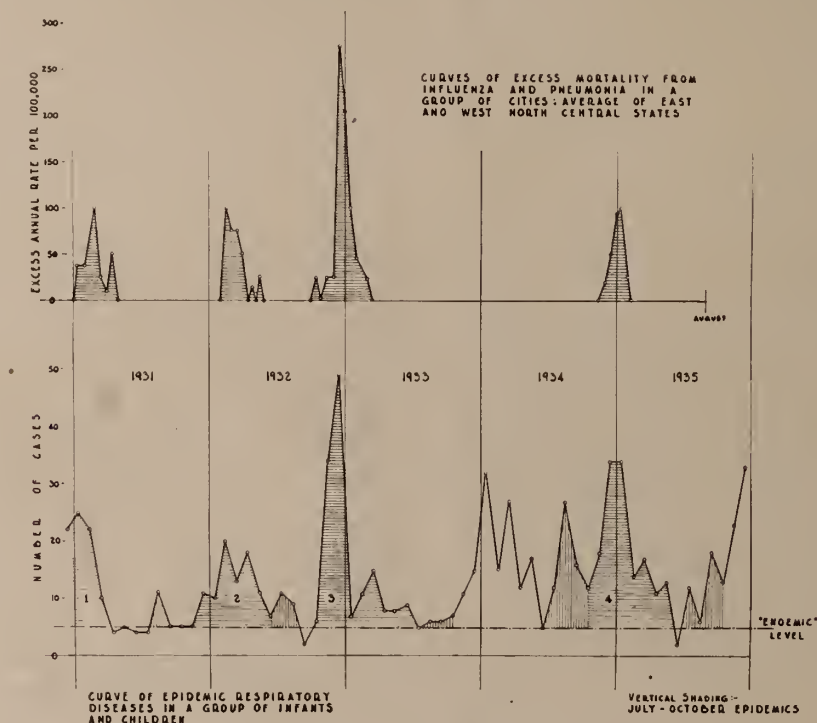


Chart 1. Epidemic Respiratory Diseases.

other interesting feature of these diseases. The five year average for age at onset in these cases is as follows:

0 to 6 mos.	4.7%
6 to 12 mos.	12.5%
1 to 2 yrs.	20. %
2 to 6 yrs.	40. %
Over 6 yrs.	16. %

These figures show that the incidence of infection is low during the first few months of life, but increases progressively in the first two years. This recorded variation with age is more significant when it is recalled that the present group predominates in infants and young children. For such a relative freedom from illness in earliest infancy, two possible explanations might be suggested. In the first place, the early months of life are a protected period when exposure to in-

possibility, supported by other studies of respiratory diseases in infants and children, is that a temporary immunity following birth counteracts infection during the first few months of life. In confirmation of such a transient, relative immunity, clinical observations not included in the present study might be mentioned. The youngest infants under care during these epidemics usually suffer mild, brief upsets in contrast to the more severe and prolonged illnesses occurring simultaneously in children of slightly older ages. Exceptions to this rule naturally occur, but these variations with age are especially noteworthy when, in families of several children with multiple cases of illness, infants of the first few months are repeatedly seen to escape serious sickness.

Because of such individual variations in reac-

tion to identical infections, the general type of disease prevalent in these epidemics must be studied in group figures. This approach is in no way peculiar to respiratory diseases. For this reason the clinical findings in the present group of epidemic infections have been recorded in percentages in the following table.

TABLE 1
CLINICAL DATA OF ACUTE RESPIRATORY DISEASES IN A GROUP OF INFANTS AND CHILDREN
Noteworthy variations from 5 year average in—

COMPLAINTS:	Percentage incidence of all cases over a period of five years	Influenza Epidemics					Non-influenzal	
		No. 2 Spring 1932	No. 3 Winter 1932	No. 4 Winter 1934-35	Winter 1935	July-Oct., 1935	Periods of July-October 1931-35 inclusive	
Cold	61						30	
Cough	49		61	69			18	
Anorexia	37		28		56			
Abdominal pain...	11		7	6.4	25	15		
Vomiting	21	27	14	14	37	28		
Diarrhea	5.7		2.4			13		
Irritability	19				7.3			
Listlessness	22	35			31			
Aching	12.5		18		15	17		
Earache	7.2	0	11	12	20	1—		
PHYSICAL FINDINGS:								
Pallor	6.1				12			
Coryza	37	62	47		20	23		
Pharyngotonsillitis ..	63	40	75		53			
Adenitis	30	21	18	22	51	40		
Otitis Media	16		32	22	23	5		
Tracheitis	5.3		9.6		7.3			
Bronchitis	8		5	10.7	15	4		
Pneumonia	4	0	6	8.6	7.3			
Laryngitis	8.7		3.6	5.4	4.4	6.6		
Asthma	4		11		1.5	2		
DURATION:								
1 to 3 days.....	26				9	46		
3 to 7 days.....	35					27		
Over 7 days.....	39				60	25		
COMPLICATIONS:								
Otitis Media	6		11	3	13	1—		
Adenitis	3	0	3.6	0	4.4	3.8		
Pneumonia	4	0		6.4	6	2		
Additional	1—	0	0	0		0		
Total complications	14	4	20	9.6	25	6.6		

Increased rates in heavy figures.
Table 1—Epidemic Respiratory Diseases.
Wilkinson, Scott J.

It is realized, of course, that these percentages have no exact value, especially in the smaller groups. Marked variations in findings recorded by a single observer, however, should have a definite value in contrasting variable features of different epidemics. The present table lists all findings in percentages for the five year average of all attacks, together with scattered data in separate epidemics where the percentages varied significantly from the five year averages. The blank spaces may be assumed to vary less than 20% from the five year averages. Allowances must

obviously be made for the various findings according to their character. The incidence of otitis media, for example, as indicated under the symptom of earache, is inaccurate in a group containing infants. As a physical finding, however, the condition is subject only to personal interpretation of the changes in the ear drums, which were always inspected in these infections. As a complication, the figures for otitis media are exact except for the possible occasional case with delayed development seen directly by an otologist.

Inspection of this table immediately shows that epidemics of influenzal origin have no constant features. Epidemic No. 1 was not included in the table, since it occurred in part during the close of 1930. The spring epidemic of 1932, No. 2, was obviously a very mild type of disease, since complications were minimal in the absence of pneumonia and acute cervical adenitis. Coryza, vomiting and listlessness were relatively increased while pharyngeal and adjacent lymphatic involvement were decreased. The next influenza epidemic in the winter of the same year, No. 3, went to the other extreme. Coryza was increased, together with cough and aching, and these symptoms were associated with greater involvement of the pharynx and lower pulmonary tract. Otitis alone was practically doubled in incidence, which accounts for the notably increased rate of complications. The winter epidemic of 1934-35, No. 4, was intermediate to Nos. 2 and 3. The incidence of cough, earache and changes in the ear drums were elevated, but the noteworthy feature was the relative excess of lower pulmonary disease with average involvement of the nasopharynx and minimized adenitis. In spite of the increased symptoms and signs of otitis media, actual middle ear complications were decreased, contributing to the lowered rate of complications noted in this epidemic.

Passing to non-influenzal epidemics, a type of illness more severe than any influenza epidemic occurred in the winter of 1935. Although this period was not covered by the study of influenza reported by the U. S. Public Health Service, subsequent summaries of disease prevalence in the Public Health Reports² have not recorded any unusual incidence of influenza at this time. The strikingly high rate of complications in this

2. Summaries of Current Prevalence of Communicable Diseases. Public Health Reports, 50: 1779-1781, Dec. 20, 1935; 51: 53-56, Jan. 17, 1936.

epidemic involved uniformly the ears, glands and chest. Curiously enough, coryza and pharyngitis were decreased, but the excessive aching, listlessness and gastrointestinal disturbances were apparently premonitory signals for the relatively prolonged illnesses and high complication rate marking this epidemic.

Finally, the combined warm weather epidemics for all years have been tabulated together because of their consistent variations from the winter type of disease. In these seasons epidemics were noted in four of the five years reviewed here. The collective group showed a predominance of gastrointestinal symptoms and aching in association with an increased rate of adenitis. Complications were not common and the average duration of illness was notably shortened, approximately half of the attacks lasting three days or less. The clinical features of this group are very suggestive of the possible epidemic presence of unrecognized, non-paralytic poliomyelitis. Such an interpretation is based on the current theory that poliomyelitis is a general disease, clinically characterized by epidemics involving early age groups. This theory presumes that poliomyelitis is ordinarily prevalent as a mild systemic infection with actual paralysis an untoward and uncommon complication. There are many clinical observations and much sound laboratory evidence to support this view and the present group indirectly favors the occurrence of such epidemics. For comparison of the clinical features of the present group with poliomyelitis, the symptomatology of the latter, as given by Draper³, might be quoted. He states that "the febrile reaction may be associated either with a coryza or cough, or with violent gastrointestinal disturbance usually a diarrhea and very often vomiting, or simply with general malaise and loss of appetite. At times no changes appear (in the reflexes). The fever is of short duration. The superficial lymph nodes are invariably palpable and almost always enlarged." This description is certainly in close accord with the features characterizing the epidemics noted here. As a matter of fact, in the present group, two cases of poliomyelitis were seen in the midst of the 1934 summer epidemic. One of these children had a transient weakness of the neck which might easily have been overlooked except for

the concurrent illness in her twin sister which resulted in severe paralysis of the legs.

Discussion. From the epidemic data recorded in the present table it would appear that clinical studies merely exaggerate the recognized complexities of acute respiratory diseases. On the present chronological graph it is surprising to find that little or no opportunity is given to implicate the common cold as a demonstrable offender in initiating epidemic disease in children. Two contradictory explanations of this observation might be suggested, first, that colds are not severe enough to merit medical attention, nor to act as the cause of serious epidemic disease in early life, or second, that diseases classed as colds in adults occur simultaneously in this age group in a severe form inseparable from other infections such as influenza for example. Influenza virus infection, on the other hand, appears as a distinctive factor in the epidemic illnesses of this group. From the clinical viewpoint however there are no constant features in influenzal epidemics to identify them with each other or to separate them from non-influenzal disease. This suggests that the respiratory epidemics of winter, in children at least, are manifest clinically not in terms of a primary precipitating agent such as cold or influenza virus, but rather as exhibitions of other infectious agents, presumptively the secondary bacterial invaders ordinarily involved in these diseases. The immediate character of any epidemic, then, presumably depends upon the particular type of secondary invader prevalent and pathogenically active at the time.

From this viewpoint, it appears that diseases loosely termed acute respiratory at present must eventually be separated and recognized as syndromes of specific bacterial activity. Whether definite clinical trends can be associated with specific bacteria by the character of the epidemic and its complications, independent of bacteriological culture, is an undetermined and doubtful problem at present. The present epidemics are quite suggestive of the occurrence of variable secondary invaders with specific pathogenic trends.

The relative role and behavior of precipitating agents of epidemics, such as influenza virus, as regards their action on the host or secondary bacterial invader, or both, remain unsettled problems whose solution may eventually aid in con-

3. Draper in Cecil's Text-book of Medicine, 3rd Edition, 1933. W. B. Saunders & Company, Phil.

trolling these widespread illnesses. The possibility that epidemic poliomyelitis is commonly prevalent in population groups of appreciable size, with rare instances of paralytic complications, must be settled by future studies. The frequency and severity of respiratory infections in infants and children can apparently be explained only by inherent differences of the host, since exposure to environmental infection must be approximately the same at all ages. The multiplicity of factors and problems involved in acute respiratory diseases at present are a challenge to continued investigation in a very important, but relatively uncharted field of medicine.

Summary. A clinical study of epidemic respiratory diseases in a group of infants and children over a five year period is presented. Four of the epidemics were apparently initiated by generalized influenza. From the character of the disease prevalent in epidemics, however, the presence of influenza could not be determined. Other epidemics could not be associated with precipitating factors, although the clinical features of summer epidemics were very suggestive of poliomyelitis. The clinical variations in epidemics, especially noteworthy in the influenzal group, suggest that acute respiratory diseases will eventually be recognized in terms of the specifically involved secondary invader. Clinically there are suggestions of characteristic syndromes in different epidemics, possibly related to the variable bacterial invaders of acute respiratory diseases. In addition to epidemic variation, however, marked individual variability is encountered in identical epidemics. These variations in reaction of the host are probably responsible for the increased frequency and severity of respiratory infections of early life.

DISCUSSION

Dr. J. Howard Beard, Urbana: I wish to congratulate Dr. Wilkinson on his excellent paper. Unfortunately, I have not had an opportunity to see the paper, the tables or charts, so I am just a little afraid that what I may have to say will be somewhat trite and largely irrelevant.

The respiratory diseases are characterized by their causative agents, entering the body through the nose or throat, and leaving it in the nasal and oral secretions. They include diseases as different as diphtheria, controllable by antitoxin and toxoid, tuberculosis with its economic and social problems, pneumonia with its multiple causes, omnipresent measles, the ubiquitous cold, and influenza which attacks modern man with the same frequency and virulence as it did centuries ago.

My few observations will be restricted to colds, influenza and their sequelae. These infections are a supreme challenge to the medical profession and the most important communicable diseases in the United States. They produce an enormous absenteeism in the public schools and are the major cause of loss of time from work in industry. Their prevalence is little affected by preventive measures, their death rates show no marked decline, and attempts at their control rarely do more than temporarily delay their spread. Medicine today is about as impotent in controlling pandemics of colds and influenza as it was when Hippocrates taught at Cos in the Periclean Age.

The complications and sequelae of acute respiratory diseases are more important than the original infection. Otitis media, sinusitis, tonsillitis and bronchitis cause colds and influenza to be painful, incapacitating and dangerous. Secondary invaders make them stepping stones to pneumonia, endocarditis, myocardial degeneration and renal damage.

The methods proposed for the prevention of acute respiratory infections have been numerous but usually have quickly become obsolete. Bathing, sleeping porches, ultra-violet light, chlorine inhalations, and special dietaries have not proved to be specifics. Experimental evidence suggests vaccines do not prevent infection with a filterable virus, but may increase resistance to secondary invaders which produce the complications of colds and influenza. "Keep away from the cougher and sneezer" is good advice, but is impractical in industry, in school, in the movies, or in the bus which takes us to the office.

Avoidance of exhaustion, the sterilization of eating and drinking utensils, and the correct use of the handkerchief are helpful in combating acute respiratory infection. If individuals can be educated to regard colds and influenza as potentially dangerous and to go to bed, keep warm and call the doctor when fever or marked symptoms develop, they will reduce the occurrence of complications, decrease the mortality rate of pneumonia and protect the public by semi-isolation.

Dr. Scott Wilkinson, Decatur (in closing): I do not think there is a great deal more to add. I had the same thing in mind that Dr. Beard referred to. After all, measles is nothing more than an acute respiratory disease with a characteristic rash. Scarlet fever is a similar infection, clinically recognized at times, however, without the rash. The ideal situation would be to be able to separate more of these groups so that we could think of them individually rather than in the mass.

"You are senile, old man," the young golfer said,
 "And you swing like an awkward old cow,
 Yet your score is consistently over my head;
 Won't you tell me the why and the how?"

"In the days long ago," the old man answered back,
 "How I practiced through sunshine and storm,
 But now I step up and just hit her a whack,
 And I don't give a damn about form."

—C. G. Farnum, M. D., *Peoria Medical News*.

VASOSPASTIC DISEASE OF THE HANDS OF MINERS DUE TO VIBRATION

C. H. DRENCKHAHN, M. D.

URBANA, ILLINOIS

It is most opportune at this time to call to the attention of the medical profession a syndrome occurring in the hands of coal miners. This syndrome consists of a numbness and blanching of the hands and is significant because of the fact that coal mining is such an important industry in the United States and especially in Illinois. It has been observed by people connected in some manner or another with coal mines that occasionally a miner will complain bitterly of having numbness and neuralgic pains in the hands especially in the winter time. This was thought to have been due in some way to his occupation, but no further explanation or inquiry was made. It has been known for some time that when the hands are exposed to tools of high vibratory frequency a disturbance in function occurs in the arteries of such traumatized members. This disturbance of function is one of vasospasm.

Thus far two tools have been incriminated in the production of this disease. They are the pneumatic hammer used by stone cutters and the instrument used by shoemakers in the manufacture of shoes. The coal miner's pick may be added to this list of tools which are responsible for vasospastic disturbances of the hands due to vibration.

Vasospasm in the hands due to the use of the pneumatic hammer was first described in 1917 by United States Public Health workers who were requested by the stone cutters' association to investigate the disease.¹⁻⁶ It was brought out in this investigation that the handle used in the air hammer weighed from two to 5 pounds and measured from six to twelve inches in length. This handle held a light cutting hammer which delivered about 3,000 strokes per minute. It was shown that the vibrations were directly transmitted to the handle of this hammer. Stone cutters exposed to such a light air hammer over a period of months or years suffered from a syndrome consisting of numbness and blanching of the hands which was interpreted at the time as being due to vasospastic disturbance. It was

pointed out that structural steel workers handling an air riveting hammer seldom suffered from the disease because the hammer handle was heavier, the riveter was longer, and the tool delivered only about 1,500 strokes per minute. Certain remedies were proposed for the stone cutters' disease. Among them were the discontinuance of the use of the pneumatic hammer, the wearing of gloves and the reduction of the power of the grip and the body weight applied to the tool. In 1927⁷ this syndrome was described in shoemakers who handled high frequency vibratory tools in the course of the manufacture of shoes. Here again the tool was light and the vibrations were quite high. In 1933 Hardgrove and Barker⁸ reviewed the literature and reported a case of a patient with pneumatic hammer workers' disease. No reference has been found in the literature in which this disease has been described as being due to the use of the miner's pick. Likewise no one has ever demonstrated the vasospasm of this disturbance by means of arteriography.

The classical description of vasospastic disease of the hands due to prolonged high frequency vibration is almost stereotyped. After a few months to several years of exposure to the vibrations the patient notices attacks of blanching and numbness of the hands. These attacks do not occur while the patient is working but come on typically during his rest periods or during the night. The attacks usually come on more frequently in the winter months when exposure to cold is more prone to occur. Associated with the blanching and numbness most cases complain of a discomfort in the hands. In a few instances this discomfort is described as a toothache-like pain which is annoying enough to keep the patient awake at night and at times even to give him thoughts of suicide. The cause of the pain in vasospastic disease is not clear, but it is probably due to an anoxemia of the nerve endings. The attack can be relieved by rubbing the hands or by using any other method which will restore circulation in the parts. The fingers and parts of the hand involved are those that come in direct contact with the vibratory surface of the implement handled. Between the attacks there is no discomfort nor are any changes seen. There seem to be no secondary changes in the hand. In most instances permanent relief can be obtained by discontinuing the occupation although a few

From the Department of Medicine of the Carle Hospital Clinic.

Read before Section on Medicine of the Illinois State Medical Society, Springfield, May 19, 1936.

cases have been reported in pneumatic hammer workers where the attacks have returned on exposure to cold even after the work had been discontinued for a period of ten years.

This syndrome was discussed with a physician⁹ who lives in the immediate vicinity of a coal mining district, and he has seen several cases answering to the description as outlined above. Several of these cases have come to my attention, and in this paper one of them will be described in detail.

The patient is a white male, aged 31 years, who registered at the Carle Hospital Clinic on February 8, 1936, with the chief complaint of numbness and pains in the hands and fingers. He stated that he had worked as a coal miner, handling a pick, since the age of fifteen years. At the age of 23 he had his first attack of numbness and pain in the hands. He thought this was due to his work and accordingly he quit mining and worked for one and one-half years as a plasterer's helper carrying mortar. The numbness left him in a short time while he was working at that trade. He returned to mining again at the age of 25 and has continued at that occupation up to the present time. At the age of 28 he noticed a return of his former symptoms.

The syndrome, as it was elicited from him, can be set down as follows: In the fall of the year when the weather became cold he noticed numbness and pain in the hand. This came on during his inactive hours and particularly at night. While at work he had no symptoms. The numbness and pain could be relieved by rubbing the hands or by flexing and extending the fingers. If the arms and hands were allowed to rest quietly in from ten to fifteen minutes the pain would return. He could not observe any blanching of the fingers due to the fact that his hands were always covered or stained with coal dust. The palmar surface and sides of the fingers of the left hand were involved while only the palmar surface of the distal half of the fingers of the right hand were involved. For the month prior to his admission the patient had slept very little. The weather had been unusually cold. To obtain any sleep at all he would "cat nap" by sitting on a chair in the reverse manner with his hands and arms hanging down over the back of the chair. The chair was near the stove. In this position he would be able to sleep for possibly three quarters of an hour at a time. He would then wake up with pain. He obtained relief in a few minutes by walking about the room, rubbing his hands or swinging his arms. He lost fifteen pounds of weight during that month. In the past he had observed that when warm, spring weather came on the symptoms would disappear only to return in the fall of the year. The temperature of the mine was constant at about 65 degrees. In handling the pick the patient stated that a severe stinging sensation was felt in over 50 per cent. of the strokes, especially if these strokes were a trifle off center. He also noticed that if he

"picked" 25 tons of coal a day he had more numbness and pain at night. If he "picked" 12 tons a day he had much less pain. He averaged about 18 to 20 tons a day. He struck his blow both right and left handed. The left was always closer to the blade and took up most of the stinging sensation. Also, as was stated before, the left hand was the more involved of the two.

The family history was negative. His parents and grandparents were born in America. Originally he was of French, Irish and Scotch extraction. He smoked one package of cigarettes a day.

Physical examination showed the patient to be very nervous. The face appeared drawn. The temperature was 98.2° F. The mouth was edentulous. The heart, lungs and abdomen were negative. The blood pressure was 122/80. The cold test as described by Hines¹⁰ was negative. The skin of the hands was cold and sweaty. Allen's test was negative for radial occlusion. However, upon occlusion of the radial artery by external pressure normal color was slow to return in either hand with the ulnar artery alone supplying the blood. An attack of pain and numbness could be precipitated by immobilizing the hands. During the attack, blanching of the fingers of the left hand could be seen, but this was not true of the fingers of the right hand. Neurological and fundus examination were both negative. The urine analysis, blood count, Kahn and Wassermann tests and gastric analysis were all negative or normal. X-ray examination of the cervical and upper dorsal spine was negative. The patient was permitted to have an attack of numbness of the hand, and then arteriography was carried out by injecting Thorotrast into the left brachial artery just above its bifurcation, according to the manner outlined by Allen and Camp.¹¹ These films were interpreted by Dr. Cesare Gianturco. He stated that the left ulnar artery showed a spastic area measuring about 1½ cm. in length and situated at the level of the wrist. There was no evidence of anatomical changes in the arteries.



Figure 1. Arteriogram demonstrating the spastic area of the ulnar artery.

In order that there may be a clearer conception of the methods involved in the treatment of such a case as this, we must review the mechanics of the pick. The pick is probably one of the oldest tools used by man. Since the stone age it has undergone considerable metamorphosis, so

that at the present time the modern patented pick is more complex although it still retains the fundamental mechanical principle of the ancient pick.

The patented pick was invented about 1900. The reason for its invention was one of convenience and necessity. About twenty pick blades are dulled in one day, and coal miners found it

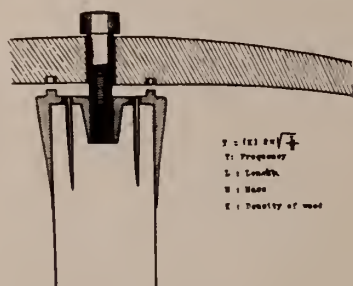


Figure 2. (a) Cross sectional drawing of coal miner's pick. (b) Formula for determining the frequency of vibrations.

rather inconvenient to stop to sharpen the dull blade that many times a day. It would have been too bulky to carry twenty picks to the mine in order to save that sharpening time. With the patented pick the blade can be detached from the handle. The twenty blades necessary for the day can be strung on a wire and transported to the mine very readily. At night they can be transported to the surface of the mine and there they can all be sharpened at one time. The end of the pick handle is fitted with a modified ferrule which contains a threaded inset. Two steel pins are driven into the handle through holes in the ferrule. These pins are inserted in order to cause expansion of the wood and to hold the ferrule tight to the handle. Two small knobs are located on the blade surface of the ferrule and fit into corresponding holes in the blade. These knobs are for the purpose of maintaining proper alignment of the blade. The blade is held fast to the ferrule by means of a heavy bolt which is screwed into the threaded inset. The handle of the pick is purchased in standard lengths of 23", 26" and 31". Many miners saw off the pick handles to an 18" length. After using the patented pick for a few minutes to half an hour the blade becomes slightly loosened, especially if the bolt was not tightened solidly in the first place. The contact between the blade and the

handle is metal. The shortened handle, the loosened connection and the metal contact all enhance the possibility of vibration.

The formula for the number of vibrations in this pick handle is $T = (K) 2\pi \sqrt{\frac{L}{M}}$, where

T = Frequency, L = Length of the Handle, M = Weight of the Mass of the Pick Handle, and K = Density of the Wood. It has been estimated that the number of vibrations occurring in the pick handle used by the patient was about 4,000 per minute.

The treatment consists in eliminating the vibration as much as possible. This is carried out in several ways. First, a leather washer $\frac{1}{4}$ " thick is inserted between the bolt head and the pick blade. This leather washer is covered by a steel washer to prevent the bolt head from abrading the leather as the bolt is screwed into the threaded inset. In a similar fashion a thin leather washer is inserted between the pick blade and the ferrule. Second, the pick handle is covered with two layers of bicycle tape; and third, the laborer is to wear leather gloves. In a few days the patient is functionally well and remains so as long as he takes the above precautions.

In conclusion, a description has been given of a vasospastic disturbance in the hands of coal miners, this disturbance being due to the hands coming in contact over a prolonged period of time with the high frequency vibrations of the coal miner's pick handle. An arteriogram actually demonstrating the spastic disturbance has been presented. The mechanical imperfection of the patented pick has been described. The remedy for this imperfection has been outlined.

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DISCUSSION

Dr. Harold Voris: Dr. Drenckhahn's presentation has been of a great deal of interest to me, from two standpoints: First, the physiological one. Lewis, in the British Medical Journal in 1932, cited cases of "stone-cutters' disease" and "shoemakers' disease," which are comparable to this case of Dr. Drenckhahn's, in support of his concept that the pathology in Raynaud's disease was a local arterial disease of the extremities and was not an abnormal central vasomotor reflex.

Without going into the question of Raynaud's disease, I think it should be pointed out that cases like this are not comparable to Raynaud's disease, first, because of a lack of symmetry, these processes being most manifest in that part of the extremity which is most subject to the vibrations; secondly, the lack of progression. Neither Dr. Drenckhahn's case nor the cases reported of stone-cutters' disease ever showed any progression, trophic changes or ulceration.

Rothstein's study in 1918 of cases of stone-cutters' disease demonstrated sensory changes in the extremity of greater extent than the areas in which the vasospasm appeared, and in areas which corresponded, at least grossly, to the peripheral nerve distribution.

For those reasons I would prefer to consider the pathology of this case as a locally induced vasomotor spasm in the peripheral vessels of the extremity, whereas I do believe in Raynaud's disease that one of the underlying factors is an abnormal vasomotor reflex. I think it could be suggested that those who have the opportunity to study further cases of this type might well attempt to settle this problem.

It occurs to me a diagnostic novocaine infiltration of either the cervicodorsal ganglia or an injection of the ulnar and median nerves, to see whether the spasm could be induced, after such a procedure, might help in settling the question.

The second point is a matter of therapy. This case of local induced vasospasm by vibration would seem to respond satisfactorily to conservative management directed at the removal of excessive vibrations, so that, while in the more severe cases of Raynaud's disease there is a distinct field for surgical intervention, in these cases there does not seem to be any need for surgical intervention.

IRRADIATION THERAPY OF INTRACRANIAL NEOPLASMS

T. J. WACHOWSKI, M. D., AND
ADOLPH HARTUNG, M. D.

CHICAGO

Since 1906 both roentgen rays and radium have been used in the treatment of tumors of the central nervous system by many workers with various techniques and results. In that year, Raymond¹ in France showed the efficacy of the roentgen rays in syringomyelia and, in the same year, Babinski² obtained a cure in a case of compression of the spinal cord. In 1909, Beclere³ in France and Gramegna⁴ reported successful results with hypophyseal tumors. Other intracranial neoplasms were soon added to the list.

The early reports of irradiation treatment of intracranial growths showed a high mortality rate (16.9%) traceable directly to the irradiation. Less severe sequelae such as headaches, nausea, vomiting and increase of paralysis and of choking of the optic discs were common. Beclere⁵ ascribed these untoward results to what he called the preaction. He believed it to be due to an acute hyperemia and swelling of the irradiated area, appearing in from one to several hours after the irradiation and disappearing in from 24 to 48 hours. This phenomenon, occurring in a patient already in a critical condition because of either generalized increased intracranial pressure or localized pressure of a tumor on a vital center in its vicinity, may easily cause death. Froment, Delore and Tassitch⁶ measured the cerebro-spinal fluid pressures both before and after treatment in five cases and found increased values after the treatment. They obtained greater increases with larger doses, especially when the pressure was already high.

It is impossible to judge the efficacy of the therapy given by the early workers because of the variation of techniques and the impossibility of correlating the dosages. It was soon recognized that in certain cases irradiation was of no value. Ewing⁷ in 1921, predicted that those tumors exhibiting marked anaplastic tendencies would be found more radiosensitive. In 1925, Bailey⁸ reported the results of roentgen therapy

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in 59 cases which had received at least six treatments. On the basis of this experience and theoretical considerations, he concluded that the meningiomas, acoustic neurinomas, and suprasellar cysts were not suited for irradiation. The gliomas, he found, reacted irregularly. Some of the cases of pituitary adenoma showed good results and a pre-operative trial of irradiation was recommended if the case could be closely followed by a neuro-surgeon. Post-operative deep therapy was thought advisable for all of this group.

In 1928, Bailey, Sosman and VanDessel⁹ reported the results in 62 cases of glioma treated with roentgen rays from which histological material was available. Although it was often very difficult to accurately evaluate the relative improvement caused by the operation, and associated decompression, and that due to the irradiation, these workers reached certain conclusions. They found that irradiation caused marked temporary regression of medulloblastomas, but that recurrence was the rule. Roentgen ray therapy offered some relief and increased the duration of life in the spongioblastoma multiformes. In cases of astrocytoma protoplasmaticum, they noted only a slight average increase in longevity but a marked temporary amelioration of symptoms was often seen. Astrocytoma fibrillare, a slow growing tumor, was found ray-resistant. Astroblastomas, containing fairly numerous mitotic figures, were prone to early postoperative recurrence. Irradiation therefore seemed indicated, although the authors were unable to find any conclusive evidence of its value. The foregoing statement applied also to the oligodendrogliomas. In both of these groups, post-irradiation reactions were frequent. Neither the spongioblastoma unipolares nor the ependymomas were favorably influenced by roentgen therapy. Their findings substantiated Ewing's earlier prophecy.

These authors also stressed the need of operative exploration prior to irradiation firstly to verify the presence of a neoplasm; secondly, to check its clinical localization and extent; thirdly, to determine the nature of the tumorous growth so that radical surgical procedures could be performed where these offered the best prognosis; and, fourthly, to secure the benefits of decompression when irradiation is indicated.

The importance of verifying the presence of a

growth is well illustrated by a case of subdural hematoma which we recently saw. The history and findings were indefinite, while the ventriculogram revealed marked displacement of the lateral ventricles. This finding ordinarily would be indicative of a fairly large growth in the temporoparietal area. The surgery done resulted in a cure while irradiation certainly would have been of no avail. As regards the correct localization of the lesion, occasionally the symptoms and findings may be misleading. Thus one case in this series was explored suboccipitally with the confident expectation of finding a posterior fossa tumor. None was found there and a subsequent ventriculogram showed a wide separation of the frontal horns of the lateral ventricles, indicative of a corpus callosum tumor. Likewise, the clinical signs, and even the operative findings, may not disclose the true size of a tumor. Two of our glioblastoma cases received inadequate therapy to parts of their tumors because of ignorance of their very large extent as revealed by subsequent autopsy findings. Finally, the high mortality of the early workers is ample proof of the dangers inherent in the pre-reaction occurring within a closed skull. If a decompression has been done, the opening in the bone acts as a safety valve and the danger of serious post-irradiation sequelae is greatly reduced. Where operative procedures disclose a lesion which is known to be radioresistant, irradiation is ordinarily contraindicated. Then again, in certain more or less radiosensitive groups, such as the gliomas, operation may demonstrate cystic or very slow growing lesions which may not be amenable to complete removal but can be markedly benefited by subtotal resection followed by irradiation.

In connection with the pituitary tumors, these may develop from any of the different cell types contained within the hypophysis. The predominance of one or the other type of cells in these adenomata gives rise to different clinical manifestations and has a direct bearing on the response to irradiation. It is generally accepted that the chromophile cells, which are predominant in the adenomata responsible for gigantism and acromegaly, are susceptible to irradiation and therefore such treatment is indicated in these conditions. Only rarely are good results seen in those tumors with a predominance of chromophobe

cells. Rand and Taylor¹⁰ believe that the occasional good results seen are due to the fact that tumors of the pituitary gland do not necessarily run true to any one cell type but may, to some degree, be mixed. The predominating cells may be of the chromophobe type, but there may also be present a smattering of other types of cells. In adenomata with a predominance of basophile cells, irradiation is the only feasible treatment because of their small size. Striking recession of the hypertension found in these cases is sometimes seen.

Although the opinions in the literature as to the advisability of roentgen treatment of pituitary tumors are divided, many radiologists and some neuro-surgeons recommend irradiation for pituitary adenomata of any cell type as a primary measure. Treatment should be administered only if there is no great constriction of the visual fields and with the close co-operation of an ophthalmologist and a neuro-surgeon. If no improvement occurs in six months with adequate therapy or if the visual acuity and field recede, a diagnosis of a cystic tumor or ray-resistant adenoma seems probable and operation advisable.

Irradiation therapy is indicated whenever it is impracticable to remove surgically any or all of a tumor of the brain substance. Even though the cell type offers little hope of permanent benefit, it should be instituted because of the lack of any other therapeutic measure. Pancoast¹¹ calls attention to the fact that brain tumors rarely metastasize and therefore can be removed in part with safety, the remaining portion being left for irradiation. As regards the technique much depends on whether or not a decompression has been done. If none has been done, one should proceed with care, gradually increasing the individual dose until the tolerance of the patient is determined. Any untoward reaction demands immediate cessation of therapy until it has subsided. If a decompression has been done, one may proceed more radically, since it obviates the danger of increasing the intracranial pressure unduly. Even in these cases, however, reactions may occur when the tumor is very close to a vital center.

In view of the above, it is readily seen that the massive or so-called German treatment technique is not to be advocated, especially if no

decompression has been done. It was attempted by various workers who were forced to suspend therapy because of the severe reactions. Roussy, Bollack, LaBorde and Levy^{12, 13} gave up to 20,000 R (Solomon) in 20 successive days using five portals and as much as 2500 R in two treatments, using two portals. Later in their series, the daily dose was cut to 500 R per sitting. Bremer, Coppez and Sluys¹⁴ tried similar doses. Beclere⁵ soon began to fractionate his dosages. Pfahler¹⁵ applied Kingery's¹⁶ saturation theory to deep seated lesions and was able to give up to 500% of a skin erythema dose in five weeks to brain tumors without producing marked reaction. The skin showed only erythema with epilation. Pancoast¹¹ in 1928 reviewed his experiences with brain tumors. He used radium both by means of implants and external cross-firing and later utilized roentgen rays. He warned against the dangers of implanting radium directly into brain tissue. His impression was that external radium was superior to the roentgen rays. He also stressed the importance of fractionating the dosage in order to minimize the reactions.

During the past twenty months, we have irradiated fifteen cases of brain tumor from the service of Dr. Eric Oldberg at the University of Illinois Research and Education Hospitals. We used 200 peak kilovolts, $\frac{3}{4}$ millimeter copper and 1 millimeter aluminum filter at 50 centimeters. Ten milliamperes was used delivering 20.7 r per minute. The doses varied from 125 to 400 r per sitting. The usual dose was 300 r at one daily sitting. The total doses, in cases which received the entire course, ranged from 7,200 r in one of the first cases to 17,200 r in one of the later ones. About 15,000 r was the usual total dose. From 3 to 5 portals were used. All but one of the cases had preliminary operative exploration and decompression and in some an attempt was made to remove the tumor. One of the cases had received a short course of irradiation elsewhere and one had been treated by us previously with a different technique. Of the 15 cases, 8 were considered favorable for irradiation because of the histological type or rate of growth of the tumor. In 6 the treatment was undertaken because surgery was impracticable and irradiation offered the only possible therapeutic aid. In one of the cases no tumor was found but the clinical evidence pointed strongly to its presence.

The ray-sensitive group included 5 glioblastomas and 3 medulloblastomas. Of the 5 glioblastomas treated, one died during therapy after 11,000 r had been given. A second case recurred within a month after 7,950 r had been delivered. A third case was given 15,000 r and recovered sufficiently to return to work for a month. Then rapid recurrence set in. A fourth case after only

an exploratory operation received 15,000 r and is in good condition a year later. A fifth case has just recently concluded a series of 15,000 r and has shown definite improvement. Of the three medulloblastomas treated, one died during treatment after 6,250 r had been given. A tremendous hydrocephalus was found at post-mortem. A second case had received x-ray twice previously and was Coutarded for her second recurrence of symptoms. She failed to improve with 6,000 r units. A third case had an exploratory operation and a short course of x-ray in June, 1935. He was Coutarded locally to the medulla and then 900 r was given as prophylaxis to the rest of the brain and to all of the spinal cord. He is in good condition today, one year later.

Of those cases treated mainly because surgery was too hazardous, one, an infiltrating tumor of the pons, died after only 1,400 r, given with care because no decompression was present. A second case, a tumor of the corpora quadrigemina, died 3 weeks after receiving 15,000 r units. Two of the cases were tumors of the third ventricle both of which showed a marked temporary improvement followed by rapid decline. A fifth case was a tumor of the corpus callosum. He received 8,400 r and is in excellent condition now, 16 months later. A sixth case had an infiltrating glioma of the brain stem and has shown progressive improvement in the six months since irradiation with 15,000 r. The last case of the series had a long history of headaches. Marked choking of the discs was present and films showed evidence of increased pressure and dilated lateral and third ventricles. A suboccipital exploration was negative. She received 17,200 r directed to the posterior fossa. After a mild reaction in the early stages of the series, she rallied and is now in good condition, more than 6 months later. The possibility of her having a simple adhesive arachnoiditis cannot, of course, be ruled out on the evidence at hand.

In general, the treatments were very well tolerated. Only occasionally was headache noted. Two of the medulloblastomas had vomiting, one for only a day or two, the other persistently. As far as could be determined, none of the deaths which occurred during treatment could be attributed to the effects of irradiation. It was quite evident that, even though no favorable effect was produced in some of the cases, irradiation had no demonstrable deleterious effect on the course of the disease. The skin showed epilation following an erythema which was never pronounced. There was occasional dry scaling. Some of the cases have shown a remarkable regrowth of hair.

Although too few cases have been treated and too short an interval has elapsed to warrant the drawing of definite conclusions relative to the efficacy of the treatment of brain tumors by roentgen rays with this technique, the results are sufficiently encouraging to continue it. In

the main, our results approximate those obtained by workers with other techniques. Even though no claims for cure can be made, some of the cases have shown striking improvement beyond what we would have expected from the technique ordinarily used. In view of the general hopelessness of cases where operation is inadequate for cure, and no other satisfactory methods of treatment are available, irradiation offers to some of them prolongation of life and relief of distressing symptoms.

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DISCUSSION

Dr. H. C. Voris, Chicago: I am very much interested in this from the standpoint of a neurologic surgeon. I would like to reiterate what I consider was well placed emphasis on the value of preliminary exploration and decompression, both from the standpoint of a safety valve to preserve vision and to prevent development of increased intracranial pressure during the period of treatment and of waiting for treatment to take effect. Also in all possible cases the value should be emphasized of having a biopsy of the tumor in order that more intelligent treatment may be carried out. I think those points were well emphasized in this paper.

Apropos of this discussion I was much interested in

a presentation I heard by Dr. Spurling of Louisville last week on irradiation therapy of the tumors of the third ventricle which are deep seated, many of them malignant, and carrying considerable operative risk. He recommends, and I think correctly, preliminary diagnostic air studies. Of course, as repeatedly pointed out, these tumors can hardly be diagnosed except by the use of preliminary air studies. He recommends decompression and sub-temporal administration of x-ray therapy. There are some benign tumors of the third ventricle and if improvement is not seen within four to six weeks after irradiation of the third ventricle, surgical measures directed at the removal of the tumor should be instituted. Certainly it is logical with proper preliminary surgical precautions to attempt irradiation therapy of these deep seated tumors before subjecting these patients to the risk of surgical exploration.

This type of work, I think, illustrates well the advantage of close cooperation between the roentgenologist and neurosurgeon, as Doctors Wachowski and Oldberg have been doing.

It is true there are certain neurological measures to be carried out in the period of treatment, not all surgical but some of them general. These measures are toward the prevention of development of increased intracranial pressure and include the administration of hypertonic solutions as glucose or, what seems to be more advantageous, sucrose, the limitation of fluid intake, saline catharsis, and finally the removal of fluid by ventricular, or in select cases, by spinal tap. If done carefully patients can often be tided over this post-treatment reaction by the use of some of those measures where they might be lost if not instituted.

I would like to cite a case out of my own experience which illustrates the great value of x-ray treatment in certain cases. Eighteen months ago a man with a short history and neurologic findings pointing to a neoplasm of the left cerebral hemisphere was explored. Exploration revealed a large vascular infiltrating tumor in the left cerebral hemisphere and biopsy revealed highly malignant oligodendroglioma. This patient had no post-operative complications until the fifth day when he gradually developed a right hemiplegia and an aphasia. We considered this due to vascular changes in and about the tumor rather than to postoperative bleeding and went ahead with irradiation therapy. Gradual improvement has taken place and at the present time he is absolutely free of symptoms or of objective neurologic findings except for slight bulging of the decompression and he is supporting himself and his mother by working as an automobile salesman.

Dr. Wachowski: I wish to thank Dr. Voris for his discussion and his remarks about the cooperation which should be present. It is very nice to tide over some of these patients. We have done it often. I did not mention that point in order not to prolong the paper unduly. Also I did not mention some of the accidents that might happen during therapy, because such things as vascular accidents in these tumors, some of which are very vascular, are really not the fault of the irradiation therapy and have nothing to do really with the

statistics regarding the benefit to be derived from the roentgen therapy. So I think if we do this work carefully, pushing the dose as far as we can, we will get some benefit from it.

After all most of the tumors we consider as sarcomata are very notably radio-resistant or are difficult to treat by roentgen rays when elsewhere in the body. We have to consider we are dealing with sarcomata of the brain and not be discouraged too early by poor results in the first stage of the game.

A METHOD OF PERFORMING NEPHROSTOMY AND ITS VALUES

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Nephrostomy has been used more or less for the past 45 years. At first it was performed as an emergency measure on very sick kidneys without very great knowledge of the remainder of the urinary tract. In 1898, Guyon and Albarran pointed out the great ability of renal tissue to resist infection and its great ability to recover from infection once satisfactory drainage had been established by nephrostomy.

Pakowski in 1913, according to Cabot, after considerable investigation, concurred with Albarran's opinion.

Aside from the experimental work of Hinman in 1922, and Joelson, Beck, and Moritz in 1929, little had been written regarding nephrostomy before 1932. In May, 1932, Doctor Hugh Cabot and I published a paper, reviewing the subject in which we pointed out the following indications for nephrostomy:

1. *Renal Calculi.* Where there is already destruction of the renal tissue because of obstruction, temporary nephrostomy may be of value to give efficient drainage until the pelvis and ureter start functioning, and to allow a more rapid return of kidney function and probably help rid the kidney of infection by efficient drainage.

There is another group of cases where massive stones are present on each side with few or no symptoms but where there is a progressive diminution of renal function. Of these cases not suitable for removal, nephrostomy offers a new lease on life.

Watson, in 1910, suggested nephrostomy for relief of some of these patients. He reports one such case in which he performed bilateral

nephrostomy that maintained satisfactory real function for ten years.

2. *Acute Obstruction* of both ureters or of remaining one in calculus anuria or malignant disease obstructing the lower end of the uterus.

3. *Hydronephrosis* or infected hydronephrosis in which the cause of the obstruction may be removable, but in which drainage of the kidney is important to preserve or improve function.

4. *Nephrostomy* must perhaps be retained as an occasional method of diverting the urinary stream in carcinoma of the bladder where total cystectomy is contemplated.

In this group where the ureter is diseased and in certain conditions, cutaneous ureterostomy is probably the method of choice. Whether the nephrostomy is to be permanent or temporary will depend upon the conditions for which it is done. If the obstruction cannot be relieved, the nephrostomy which has been done as a temporary measure, will of necessity become a permanent one.

Technique. The earliest workers exposed the kidney and accurately placed the tube in the kidney pelvis through an incision along the convex border of the kidney. Marion later introduced a dilator through the cortex into the renal pelvis, through which he passed a catheter. (Fig. 1.)

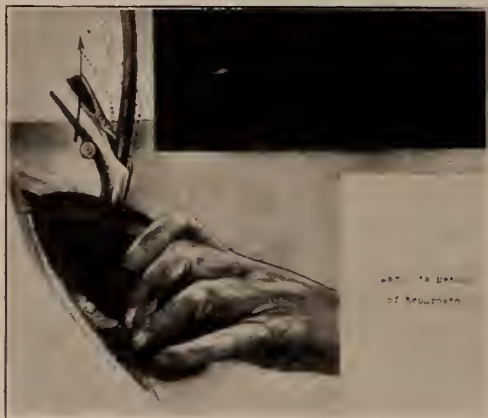


Fig. 1. Marion's Method of Nephrostomy.

Later through a small incision in the kidney pelvis he passed a curved instrument out through the cortex and drew a drainage tube into the kidney pelvis. Papin in 1927 suggested the use of a winged catheter that would maintain its position in the pelvis of the kidney. (Fig. 2.)

Whenever one is contemplating a nephrostomy, because we usually have both a sick patient and a badly damaged kidney, there are three impor-

tant requirements to consider as regards the choice of technique employed.



Fig. 2. Papin's Method of Nephrostomy.

First—That the operation be done in the shortest possible time.

Second—That a minimum amount of trauma be done to the tissues.

Third—Having done the operation, that we have established the best possible drainage of the kidney pelvis.

The method I am about to describe is particularly good regarding the first two requirements: that is, the element of time and the minimum amount of trauma. It also facilitates the fulfillment of the third requirement, that is, the drainage of the kidney through the lower calyx, which point Cabot and Jolly have indicated as being anatomically the correct point for the insertion of a nephrostomy tube.

While working with Doctor Cabot in 1930, I suggested the use of a uterine probe and a stout piece of silk to facilitate the introduction of the nephrostomy tube. Quite often in some cases mobilization of the kidney sufficient to pass a curved instrument from the pelvis out through the cortex was impossible or the amount of dissection required would unnecessarily complicate and prolong the operation. In some other cases where the pelvis is entirely intra-renal, the method suggested by Marion would be extremely difficult.

The method I wish to describe this afternoon is as follows:

After the kidney (Fig. 3) has been mobilized sufficiently to expose the renal pelvis and upper ureter, a small opening is made in either one of

these two structures, depending upon which is the most accessible. A uterine probe with a bulbous tip bent in form of a V, is introduced into the opening and brought out through the renal cortex at the point selected. As I have stated before, this point should be so situated that drainage will be established through the lower calyx. It should also be placed in relation

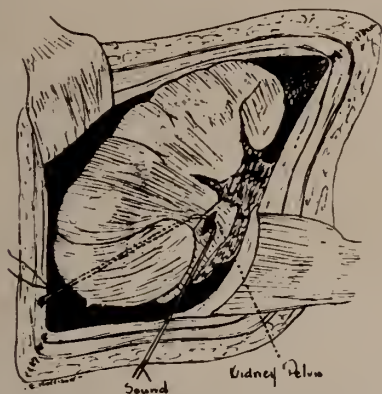


Fig. 3. Method of introducing uterine sound into pelvis, passing it out through renal cortex and attachment of silk guide.

to the convex border of the kidney in such a way that the drainage tube will lead straight from the wound and not be subjected to angulation when the kidney falls back into its normal position. This point can easily be ascertained by noting the kidney's natural position.

A piece of stout silk is then attached to the bulbous tip, withdrawn through the kidney and

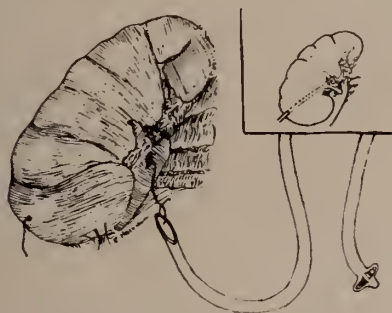


Fig. 4. Use of silk guide to draw winged catheter into proper position in renal pelvis.

out of the opening in the pelvis. The end of a No. 22 or 24 French Winged Catheter is then trimmed to a point and attached to this silk suture. (Fig. 4.) Traction on the suture then draws the catheter accurately along the tract created by the sound until the winged end lies in the pelvis at the desired position. The catheter fits the tract in the renal parenchyma so snugly

that bleeding will be entirely controlled. The opening in the kidney pelvis is allowed to heal spontaneously which usually takes place within a week.

The winged catheter is not fastened to the kidney or any of the over-lying tissues. However,



Fig. 5. Intravenous Pyelogram showing large left hydronephrotic kidney.

it is kept in mind when suturing the incision, that the catheter should emerge from the kidney to the skin entirely free from any angula-



Fig. 6. Pyelogram through a nephrostomy tube.

tion. The original catheter is left in position for two weeks at which time a straight tube is substituted. For this purpose a No. 22 rectal tube which has an opening in the end and in the side seems best. The winged catheter is removed by passing a stilette through it when

traction of the catheter will smooth out the wings and avoid laceration of the kidney tissue as it is removed. If the straight tube is immediately measured and introduced to the same depth, most satisfactory drainage can then be obtained. (Figures 5, 6 and 7.) The position of the tube



Fig. 7. Check to show position and depth of the straight tube.

should be checked by x-ray after the initial change. Later the tubes can be changed by members of the family.

The advantages of this technique are:

1. Complete mobilization of the kidney is unnecessary.
2. There is less injury to renal tissue than by previous methods.
3. The difference of calibre between the uterine probe and the catheter will serve to control bleeding from the renal parenchyma.
4. The tube can be quickly and accurately placed in the kidney pelvis.

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DISCUSSION

Dr. E. I. Greene, Chicago: There is not much I can add to Dr. Holland's paper except to bring out the fact that nephrostomy, as he has indicated, will probably save a lot of kidneys that otherwise we would remove. In some of these hydronephrotic kidneys or some of the severe pyelonephrotic kidneys, if we drain the kidney for a considerable period of time, we may be able to save the kidney. The value of this method, as I see it, is rather its simplicity and the fact that you do not dissect the entire kidney. We ordinarily think of doing nephrostomy on patients who are very sick. By not shelling out your entire kidney, you will save time. This reminds me of a seriously ill patient in whom a classical nephrostomy was done. The tube was inserted and the patient continued to bleed, eventually requiring a nephrectomy. By using a small probe and putting through a tube larger than the opening in the kidney, it acts as a tampon and will prevent hemorrhage. I think this is a splendid idea and that Dr. Holland should be complimented.

Dr. Herman L. Kretschmer, Chicago: I think Dr. Holland has covered the indications for nephrostomy very well and he differentiates between the institution of temporary drainage and permanent drainage.

The occasions for temporary nephrostomy do not arise very often. In my experience ureteral catheter drainage generally suffices.

The question of kidney drainage following the removal of stone is one that has again received a good deal of attention and I use it routinely following the removal of stones whether by nephrostomy or pyelotomy.

Formerly, accurate closure of the kidney pelvis so that there would be no leakage of urine and no attempts to drain the kidneys was the method of choice. The pendulum has swung away from this view in favor of drainage. I drain practically every case. The idea we follow is much the same as that prescribed by Dr. Holland except that I drain through the lower pole of the kidney and not through the middle of the kidney as he does, as illustrated by the lantern slides. This is a simple procedure and is carried out in the following manner: A curved hemostat is drawn through the opening in the kidney pelvis and passed into the inferior calyx and the forceps is passed through the kidney substance; the drainage tube is grasped with the forceps and pulled back into the kidney pelvis and the pelvis closed by means of catgut. The drainage tube is anchored into place. The catgut stitch is passed through the capsule of the kidney.

PRACTICAL POINTS IN HEARING TESTS AND SELECTION OF HEARING AIDS

ROBERT SONNENSCHN, M. D.

CHICAGO

It is only at the urgent request of your esteemed secretary that I am presenting a brief summary of practical points in the carrying out of hearing tests. This subject has been covered in detail by many others and myself during the past twenty-five and more years.

1. *Observation of the patient* is of considerable importance. In getting a rough estimate of the patient's ability to hear, one should note his general attitude; the close attention with which the lips of the speaker are watched; the placing of the hand behind the better hearing ear (the hand acting as a collector of sound waves and as a resonator); and the difference in the loudness of the voice.

With conduction apparatus impairment, bone conduction is increased, so the voice seems very loud to the speaker and, for fear of offending, he speaks very low. When bone conduction is diminished however, as it is in perception apparatus impairment, the individual's voice sounds very low to him and, in order to make himself easily understood, he is likely to speak very loud.

2. *Examination of the Patient*: It is necessary to carefully inspect the external ear, noting whether there are any swellings, inflammatory or otherwise, whether cerumen or foreign bodies are present in the external auditory canal; to observe the condition of the drum membrane as to whether it is normal or shows dullness, thickening, perforations; and if so, whether they are central or marginal; also note if there is secretion (serous, mucopurulent or purulent) in the middle ear, observing the color of the mucosa and whether granulations are present in the tympanic cavity.

3. *Inspection of the pharynx* is carried out, observing the size of tonsils, the secretion on the posterior wall, etc. Examination of the nasopharynx is made to see whether adenoids, tumors or adhesions are present, and whether there are any changes about the orifice of the Eustachian tube.

4. *Nose*: Inspection is done to determine whether deviation of the septum, hypertrophied

turbinate, polyps or tumors are present. Obstruction to the passage of air through the nose does not have much bearing on hearing, but interference with drainage from the nasal accessory sinuses might cause pus to invade the nasopharynx with possible infection of the middle ear by way of the Eustachian tube, or interference with proper aeration of the tube by large posterior end of inferior turbinate, may cause impairment of hearing for low tones.

I have for a long time been of the positive opinion that so far as the essential testing of hearing is concerned a very simple armamentarium is all that is needed. The human voice, a few tuning forks, the careful performance of a few essential tests, their proper interpretation, plus the clinical history and careful examination of the patient, are all that are needed to make the diagnosis, to determine the prognosis, and institute whatever treatment may be available. If the clinic or the otologist has available one of the various types of audiometer, so much the better. For actual research work the audiometer, especially one with a wide range of pitch, is highly desirable.

Voice and Watch: Hearing is usually tested by means of tones, noises or a combination of the two. A tone is sound produced by a number of equal and regular vibrations, while noises are sounds due to irregular vibrations, irregular both in length and in time. The use of the Politzer acoumeter or the ordinary watch carries with it a number of fallacies. In the first place, the acoumeter is rather high pitched, so that if the individual is deaf for the low tones, this fact cannot be elicited by this instrument alone; and secondly, the acoumeter produces a noise, not a tone.

The watch is not an accurate instrument, since no two watches have the same pitch or intensity; and secondly, noises and not pure tones are produced. As a rough measure the watch may be used, especially when no tuning forks, etc., are available.

Bezold originally assumed the speech area to be very limited in extent, namely, from b^1 to g^2 , but we know that the voice sounds range from about 200 to 4,000 or 5,000 d.v., the highest overtone of the vowel "E" being at the latter pitch. If an individual can hear all low tones below 200, and all high ones above 5,000 but cannot appreciate those lying within this range, he is unable to understand the spoken voice, and is thus deaf,

for all practical purposes, so far as human intercourse is concerned.

When testing with speech, one should endeavor to use the same intensity each time by employing the residual air, with the patient standing at the farther end of the room, and no part of the body touching the wall or heavy furniture. The opposite ear is occluded with the moistened finger, and the eyes closed or averted from the speaker. The examiner should approach the patient from a distance, noting at which points both low and high pitched sounds are heard. In English, the numerals are low pitched, except sixes and sevens.

In an open unconfined space, the intensity of sound varies inversely as the square of the distance. In a room or other enclosure, this rule does not accurately apply, since there is a reflection of sound from the walls, furniture and other fixed objects. In other words, if an individual hears one-half the distance that is supposed to be normal, it does not mean that his hearing is reduced one-half, for it may be reduced to one-quarter or some other fraction. However, a good relative idea may be obtained of the state of the hearing by noting the distances at which the various sounds are heard.

Certain points should be mentioned with reference to the physics and the action of forks. Tuning forks consist of prongs and a stem. The best forks are made of one piece of metal, should vibrate for a considerable length of time, ought to be as free as possible from overtones, and preferably made of rustless metal. The prongs of tuning forks vibrate transversely with wide excursions, but little intensity. The stem of the fork at the same time is moving in a longitudinal direction, with tiny excursions but great intensity. When sounding bodies such as strings are excited, we get not only the fundamental or actual tone of the string, but also certain overtones or harmonics. Usually the first harmonic is the octave of the fundamental, with twice the number of vibrations per second; the next harmonic is the fifth above that, and the third overtone is the second octave above the fundamental. When tuning forks are struck, overtones are also heard, the first of which usually has a loud, shrill tone, with a vibration frequency over six times that of the fundamental; these overtones are very confusing, and in order to eliminate them it is advisable to place metal weights on the lowest pitched forks. This, however, adds greatly to the weight of the

fork, and also lessens the period of vibration. On some of the medium pitched forks, instead of using weights, pieces of rubber tubing may be applied to the ends of the prongs to serve the purpose of eliminating overtones without adding to the weight of the fork, or to any appreciable degree shortening the period of vibration.

The Committee on Standardization of Tuning Forks and Hearing Tests of the American Academy of Ophthalmology and Oto-Laryngology, on which the writer had the honor of serving for twelve years in association with Drs. L. W. Dean, Geo. W. Mackenzie and E. G. Gill, sought and found a metal which would be rustless or rust-proof and at the same time have elasticity like that of the steel used in tuning forks. Some years ago a series of forks made with an alloy consisting largely of magnesium and aluminum was perfected at the Riverbank Laboratory by Mr. E. B. Eisenhour, and this material has solved the problem. These forks are very light in weight, as compared with steel, which has a specific gravity about 7.8. That of aluminum is 2.7, while that of magnesium is about 1.7, so the alloy is about 2.8. The cost of manufacture is less than that of the steel forks, and the vibration period of these forks is practically the equal of the best steel forks.

Forks are usually made in a range from C-2 (16 d.v.) to c-5 (4,096 d.v.). Forks as low as 12 d.v. and as high as 14,000 or 16,000 d.v. have been produced, but are not feasible for ordinary work, are rather difficult to obtain, and expensive. Few individuals are able to hear below 16 d.v., especially in noisy cities. Whistles, sounding rods or the monochord may be employed for testing the highest tones.

The Committee of the American Academy of Ophthalmology and Otolaryngology believes that for doing the ordinary or usual tests it is not necessary to possess more than five or six forks, and for this purpose recommends the C-1 (32 d.v.) C (64 d.v.), c-1 (256 d.v.), c-2 (512 d.v.) and c-5 (4,096 d.v.). For the Weber and Schwabach tests many individuals prefer the large unweighted A (108 d.v.) fork, while for the Rinne test as well as the Stenger test the unweighted a-1 (435 d.v.) fork is preferred.

For exciting the forks it is best to decide upon one definite routine, so that the results obtained may be fairly uniform and comparable to those made in other cases. The general rule is that

the lower the pitch of the fork, the softer should be the material used for striking or exciting it. For the very lowest ones, the side of the hand (hypothénar eminence) may be used; for the medium pitched, a rubber tipped pleximeter, and for the highest forks a metal hammer. A pendulum of metal covered at the end with rubber gives accurate and uniform results, since it can be made to fall each time through the same arc, thus giving the same intensity of impact. At about the junction of the distal with the middle third of the prong is the so-called "percussion point." Striking the fork in this area gives the greatest duration of vibration with the least overtones. The larger unweighted lower pitched forks may also be excited by holding them at right angles to the thigh, and allowing them to fall through an arc of 90 degrees, striking the flat or outer surface of the prongs against the knee. The higher pitched forks may be excited in three ways, giving varying degrees of intensity; namely, by rubbing the prongs with the finger, striking the prong with the finger nail, or as previously mentioned, with a metal hammer.

When testing air conduction, the outer or broad surface of the prongs, which usually gives the greatest intensity of sound, should be held close to and parallel with the ear, carefully avoiding contact with the auricle or vibrissae. For bone conduction, the stem of the fork is usually placed upon the mid-line of the vertex, or over the mastoid region. The former method is used in the Weber and Schwabach tests, and the latter in the Rinne test. In the Sonnenschein-Minton modification of the Rinne test the stem of the fork is used for both air and bone conduction. With this procedure we get the same result as when the stem is used for bone and the prongs for air conduction, and thus the theoretical objections to the Rinne test are overcome.

The principal tests are the Weber, Schwabach and Rinne.

Both for the Weber and Schwabach test a medium pitched, rather heavy fork is used. One of the most popular is the Bezold unweighted (108 d.v.) fork. However, the weighted c-1, known as d sharp (dis) (154 d.v.), or the c-1 (256 d.v.) may be used. Of the magnesium alloy forks, c (128 d.v.) serves very well. These forks may be excited by allowing them to drop from a perpendicular position to a horizontal one, striking the

knee or thigh, thus giving a uniform excitation to the fork.

The Weber test is used for determining whether lateralization is present by placing the fork in the median line of the vertex and the patient asked whether he hears the tone louder in one ear than the other or whether it is heard louder "in the head." In normal individuals there is no lateralization of sound. In middle ear or conduction apparatus impairment, lateralization is usually to the worse ear; with inner ear lesions it is usually to the better ear. There are many exceptions to this rule and thus the Weber is the least reliable of the major tuning fork tests, and is of value only when it agrees with and confirms the other tests. If, however, with the Weber lateralized to the worse side in a middle ear infection, there is suddenly a change in lateralization to the better hearing ear, it usually means an extension of the infection to the inner ear (labyrinthitis) of the affected side, so that the Weber then gives most important information.

The Schwabach test is carried out in the same manner, and the duration of the individual's hearing by bone is determined. In order to avoid the "fatigue" symptom, after a certain length of time the fork is lifted from the head, then replaced and the patient asked if he again hears the tone. The procedure is repeated until the sound is no longer heard after the fork is returned to the vertex. The examiner then sets the fork upon his own head to see whether the patient's bone conduction is shorter or longer than his own, in order to learn whether the patient is normal or otherwise. I have always felt that it is better to have an objective control, obtained by testing a large number of individuals with certain forks to find the average duration of bone conduction at different ages, and then comparing this figure with that obtained from the patient. The Schwabach test determines the bone conduction in the individual compared with a normal living or an objective standard. A slight diminution or a slight increase in bone conduction is of no significance, but a markedly increased bone conduction usually means conduction apparatus involvement; and a decidedly shortened bone conduction usually indicates a perception apparatus impairment. Bone conduction, however, is affected by many factors, such as age, the thickness of the skull, adhesions of the dura to the bone, etc.

The duration of bone conduction has always

seemed to me most important, for upon it rests in a large measure the diagnosis of the hearing impairment, especially with reference to the question of whether it is the conduction apparatus or the perception apparatus that is involved, or whether it is a combination of the two.

The Rinne test compares the air with the bone conduction in the same individual. A medium pitched fork, c-1 (256 d.v.) or a-1 (435 d.v.) is employed. In normal cases we have the positive Rinne, that is, air conduction is much longer than bone. Whenever bone conduction is longer than air, we have the negative Rinne. After the tuning fork is no longer heard when applied to the region of the mastoid antrum, the sound will still be heard by air conduction in the normal positive Rinne. When air conduction is longer than bone, but both factors are shorter than normal, we have a positive Rinne, but one that shows an inner ear lesion. There are also several varieties of the negative Rinne, depending upon the duration of the bone conduction. A negative Rinne usually means an impairment of the conduction apparatus, but when both air and bone conduction are much shorter than the normal, even though bone conduction is still longer than air, it usually means a combination of inner and middle ear disease. With an "infinitely negative" Rinne there is no hearing by air but slight hearing by bone, and this usually means that the ear under examination is practically deaf, and that the hearing by bone is due to "diagonal resonance," or crossed perception, and is really heard in the opposite or normal ear.

The determination of the upper and lower tone limits of the individual is very important. In order to find the lower tone limit, we begin with the lowest forks at our command, C-2 (16 d.v.) or C-1 (32 d.v.). The fork is struck, the eyes of the patient are closed, and approaching his ear, he is instructed to say when he first hears the sound. Of course, he must differentiate between merely feeling the vibration of the air striking the auricle and actually hearing the tone of the fork. We advance in the scale until we reach the point at which the patient begins to hear, and that is the lower limit for that ear. We then continue up the octaves until we reach c-4 and c-5.

When testing with the high tones, it is important that the opposite ear is closed, and that the fork c-4 (2,048 d.v.) or c-5 (4,096 d.v.) is held

close to the ear that is being examined. When the patient no longer hears the sound, remove the fork for a second, to avoid the "fatigue" symptom, and then return it to the ear. Tones higher than c-5 are usually tested with whistles or the Monochord. The Edelmann-Galton and the Schaefer-Galton whistles are the preferable ones, and these are supposed to produce tones as high as 18,000 to 20,000 d.v. The difficulty with the whistles, however, is that, first of all, it is hard for the patient to distinguish between the actual tone and the sound of the air going through the whistle. Secondly, whistles are easily impaired, so that accuracy of tone is not obtained. Thirdly, it is difficult to get either uniform pressure with the bulb, or to produce sufficient pressure needed for the very highest tones. However, as a rough estimate, whistles serve very well. The Schaefer-Struycken Monochord has a range of about 500 to 20,000 d.v., and possesses the great advantage that the highest tones can be tested both by air and by bone conduction.

The lower tone limit is usually raised in diseases of the conduction apparatus; and the upper tone limit is usually lowered as soon as any involvement of the perception apparatus occurs. If, later, there is further impairment of the inner ear, the hearing for all tones—high, middle and low—is diminished.

Quite a number of tests have been devised from time to time besides the Weber, Schwabach and Rinne. Among these are the Politzer, Stenger, Gelle, Bing, and the Lucae-Dennert, etc. Of these the most important are the Weber, Schwabach and Rinne. In determining the simulation of deafness, the Stenger test is extremely useful, but the other tests mentioned are not needed as a rule. The purpose of functional testing is to determine the presence of an impairment of hearing and the degree thereof, as well as to determine the location of the lesion; i.e., whether it is in the conduction apparatus, the perception apparatus or in both. For these purposes the Weber, Schwabach and Rinne are most essential.

For some years audiometers of various types have been used considerably, but they have not met with the universal adoption which tuning forks have been accorded. Audiometers are calibrated either in intervals of octaves, half-octaves or continuous tone series. In some of the audiometers for office use the range is from C (64 d.v.) to c-6 (8192 d.v.). In the largest audiometer

the range is from C-1 (32 d.v.) to v-7 (16,384 d.v.). Audiometers possess certain advantages such as permitting accurate quantitative measurements of acuity of hearing and the loss of hearing figured in sensation units; the production of graphs showing clearly the curve of the findings; and the comparison of records with previous examinations or with those of other otologists. In certain modified forms they are also valuable for the detection of malingering.

Various objections have been raised to audiometers, such as their high cost, their lack of easy portability, the fact that there is still some difference in the calibration of the various types of audiometers, and the fact that the curves obtained do not always indicate the exact type of lesion present. In general, we may say that as instruments of precision, audiometers are very useful, and that for research purposes they are certainly very valuable. Let me emphasize that when tuning forks are properly calibrated, and supplied with the "constant of decrement," the same curves can be obtained with them as with an audiometer, but if a number of pitches are used, it requires more time to carry out the test.

The Gelle test is used for the purpose of seeing whether fixation of the footplate of the stapes is present. On compressing the air in the external auditory canal, the ossicles, including the stapes footplate, are pushed inward, and in normal cases the hearing for the time is temporarily diminished. A hard rubber tip connected with a Politzer bag by a piece of tubing is inserted airtight into the auditory canal, a vibrating tuning fork is placed either upon the head, the tubing or the bulb of the bag, and any change in hearing noted during compression. Normally the hearing is diminished during the compression, and returns when the pressure is released. If there is a fixation, however, changes in pressure do not affect the hearing. The test is rather unreliable, for it is difficult to get an airtight occlusion of the auditory external meatus, and secondly, unless the patient is very intelligent, it is difficult to obtain satisfactory statements regarding a change in the hearing.

The Stenger test is used for the detection of simulation of total unilateral deafness. Two forks of the same intensity and pitch are employed, usually the a-1 (435 d.v.) or the c-1 (256 d.v.). The test is based on the fact that sound entering one ear "masks" that entering the other ear from

a greater distance. The patient is blindfolded during the test. In a normal individual if one fork is held, let us say, closer to the right ear than it is to the left, the individual will hear the sound only in the right ear, because it is the louder, and masks the sound entering the left ear. If the simulator pretends that he is totally deaf in the right ear, we find at which distance (let us say eight inches) he hears the fork in the left or good ear. With that fork now sounding ten inches from the good ear, the other fork is brought closer to the right ear, for instance, a distance of four inches. The simulator then really hears the sound only in his right ear but dares not admit it. Not knowing that the fork is also sounding at the left or good ear, he states that he does not hear anything at all, and thus is trapped.

Recording of Functional Tests: There has always been great difficulty in devising a method for recording the tests so that the information therein contained would be readily accessible to and understood by all readers, as well as to give a reliable index of the findings for the examiner himself. With some slight modifications, we have employed the acoumetric formula adopted at the Eighth Otologic Congress in Budapest in 1909, and have combined it with the diagram long used in the Vienna University Clinic. With either of these methods it is easy in a few moments to record the tests and have all the information available in a small, compact space. Many otologists develop for themselves schemes which seem adequate, but it is highly desirable that some method be designed which would be understood by readers throughout the world.

Hearing Aids for Impaired Hearing: For many years mechanical non-electric aids were used. These consisted in the main of hearing tubes or horns or shell-like appliances. The purpose was in the main the collection of sound waves and the direct transmission to the ear by way of the air in the external auditory canal. From the practical standpoint they served very well, but the main objection to their use arose on the part of the patients, most of whom were disinclined to carry them about and to insert them into the ear when conversing.

The electric hearing aids originally had no attachment for hearing by way of bone conduction, but in latter years this feature has been supplied, and has served a great purpose. The disadvantages of the electrical hearing aids are first that

often adventitious sounds are produced which are disturbing to the patient; secondly, that it is necessary to carry about on the person a battery, a microphonic type of receiver and an ear piece; thirdly, this type of apparatus is quite expensive. On the other hand, it is possible by means of a rheostat to increase the intensity of sound suitable for the individual involved.

As a general rule, one may state that where there is a far advanced auditory nerve degeneration, the electrical hearing aids are of practically no assistance to the patient. In those cases, however, where the bone conduction is good or even relatively increased, the electric hearing aids are highly serviceable. In otosclerosis and other middle ear conditions in which the bone conduction is good, the attachment for the bone is of immense benefit. No patient, I believe, should purchase an electrical hearing device without first having a good opportunity for testing the same with eyes closed in order to see whether an improvement in hearing really results. Stimulated by the work of Harvey Fletcher some years ago, great efforts are now being made to build these electrical aids in accordance with the type or range of the impaired hearing. In a word, to have the electric aid which will amplify mostly the pitches which are impaired in the individual.

Conclusions: In testing of the function of hearing, all aids should be employed. The observation of the patient with reference to his attitude, efforts at lip reading, loudness of his voice, etc., examination of the ear, nose, nasopharynx and pharynx should be carried out. Although the voice cannot be standardized, if unaccentuated whisper or conversation is employed with proper precautions a practical estimate of the hearing ability is obtained. This, together with the history of the patient, the use of the tuning forks, especially for the Weber, Schwabach and Rinne tests, will enable one to make a diagnosis relative to the location of the hearing lesion, if any.

With various audiometers, graphs are obtained showing the loss of hearing figured in sensation units. This may likewise be done with tuning forks when supplied with the "constant" of decrement. For practically all work in determining the location of the lesion, etc., merely a few good forks are sufficient. For the highest tones neither the forks nor audiometers suffice, and the Edelman-Galton Whistle or, better still, the Monochord is needed.

Audiometers are also very useful, and especially for research work. Each type of appliance, fork or audiometer has advantages and some disadvantages, but all the important information can be obtained by correlation of the history of the patient and the examination outlined above. By means of the voice and a comparatively modest instrumentarium all the essential hearing tests may be done.

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DISCUSSION

Dr. Joseph C. Beck, Chicago: A presentation by Dr. Sonnenschein on the functional tests of hearing is all that need be said as to clarity and usefulness in his description of well-known accepted tests of hearing. There are no new tests of hearing except the audiometer, perhaps, but the new thing would be if the men would use the old tests that are so well established. That is my criticism—that we do not make the tests—and when are made, many times not with the principles of physiology of hearing in mind, as outlined by Dr. Leshin. The graphs made from the audiometer compared with those made with tuning forks are valuable, but the one difficulty is that it takes too much time. People do not want to take the time to make an accurate test it seems, and if this is not done the test is of no value. The practicability must be considered.

In the description of tests of hearing it is said in the paper that the finger placed in the ear is enough to exclude the opposite ear. I want to differ from that. When you take a patient and plug up the ear with the finger or anything else, and then go on testing with the voice you will find a tremendous difference in the result you get in that test if you mask the ear by rubbing the auricle or use some voice apparatus. What interests me is the tests for malingering, of which I have had a great deal of experience at Hines Hospital, where we are trying honestly to ascertain what a patient is entitled to in claiming to be deafened. We find the finest make-believers; we have a great deal of trouble with all the various tests, in trying to actually pin them down as to what their hearing is. When the perfected lie detector is permitted to be used in institutions we will have the best detector of malingering. One of the best practical tests when you have a patient who says he does not hear is to take a half-dollar and drop it on some hard surface when he is not looking. It is hard for him not to turn around to see where and what it is that dropped.

Regarding hearing aids, you know how the opticians and optometrists have put themselves forth in the minds of the public as to the value of making proper examinations of eyes—so it is with hearing devices. We hear the merchants advertise that they will make a test of hearing before selling a hearing aid, and they use the audiometer, which I am sure was never planned for that purpose. The majority of people who buy these costly articles receive no benefit, because they have no hearing for that kind of an apparatus. It should be emphasized that we have a great aid for these

markedly deafened people in lip reading. That will give them more help than all these apparatuses, and lip reading is one great advance in the education of these unfortunates of recent years.

DERMATOPHYTOSIS OF THE FEET, HANDS AND GROINS

Clinical and Therapeutic Consideration
Emphasizing the Stages of Infection

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SPRINGFIELD, ILL.

Fungus infections have insidiously advanced in the field of medicine until today they are a major problem which must be met by every physician. The individual physician is primarily concerned with the treatment of this affliction. He wants a treatment regime which may be adapted to all stages of the infection and exact information regarding its application. This paper will offer proven therapeutic procedures for dermatophytosis of the feet, hands and groins, emphasizing particularly the fundamental importance of treatment directed towards the stages of infection. A short, concise review of our present knowledge regarding the etiology, clinical pathology and symptomatology of dermatophytosis will be presented first as a basis for its treatment.

Etiology. While the primary cause of dermatomycosis is, of course, the mould fungi, with a complicated mycology and pathology which few but botanists remember, it is of particular importance to realize that this infection is due to fungi.¹ We are dealing with a fungus and not a bacterial infection. Disregard of this fact is responsible for clinical confusion and therapeutic failures because the fungus organisms, their pathology and treatment, are entirely different from bacteria. Therapy must be directed towards the peculiarities of the mould fungi.

Epidermophytosis is today probably the most prevalent affliction we have to encounter. Its incidence ranges from zero in young children to almost 100% in college athletes.^{2, 7} At the University of California, of 3,405 Freshmen, 51.5% of the men and 15.3% of the women were clinically positive for ringworm.³ Similar figures were obtained at the University of Pennsylvania when, of 1,073 patients, 529 or 59.7%

were infected.⁴ 10% of all skin diseases in a German clinic are due to fungi while they constituted 9.7% of the private patients in a dermatologist's office.^{5, 6}

Many factors are responsible for the increasing incidence of fungus infections. As Strickler says: "Fungi possess inherent and enormous powers of spread, multiplication, prolonged and hardy life and a tendency towards a resting spore stage of indefinite duration and latent virulency even under adverse circumstances."⁴ They do not ordinarily inhabit healthy skin but when once acquired probably are never entirely eradicated even when asymptomatic.⁸⁻¹² Fungi are found everywhere, most frequently on and in leather, woolen and silk goods, dark, damp places as swimming pools, bath-rooms, Turkish baths, shower rooms of clubs, gymnaseums and bathing pools and beaches. There is a varying degree of individual and family susceptibility.¹³ The social status of the patients seems to have little influence in the spread and incidence of the infection nor does cleanliness ward against infection although the accumulation of perspiration and dirt may cause a quiescent infection to become active.^{3, 13, 14}

The common localization to the feet may be explained by excessive perspiration, apposition of skin surfaces and frequent maceration and injury of the skin. The interdigital spaces furnish an ideal environment for the growth and multiplication of fungi because of moisture with a slightly alkaline reaction, pH from 6.8 to 11, furnished by increased perspiration, abundance of food supplied by the hyperkeratotic and macerated skin and increased skin temperature due to confinement of the feet in shoes.^{4, 14} Orthopedic problems as misfit, particularly too short shoes, flat-feet and other malposition of the feet, which are a factor in the increase of perspiration, definitely have a role in this problem.^{15, 16}

Clinical Pathology. Ringworm fungi, when they inhabit the skin, are located for the most part in the stratum corneum and stratum granulosum or in the outermost layers. They proliferate and grow between the cells of the horny layer and produce a ferment which causes a dissolution of the cells and exerts a toxic effect resulting in definite inflammatory changes which involve the entire skin. There is no basic patho-

logical difference between the various types of dermatomycosis except degree of intensity of the irritation and inflammation. The severity of the infection seems to be in direct proportion to the depth of tissue invasion and this seems to depend on the variety of the invading organism and is not influenced by the health or resistance of the patient. Fungi have been found in apparently normal skin several inches from areas of evident infection. Also, organisms in spore stage have been recovered from apparently normal skin and beneath the nails many months after a clinical cure.^{4, 11, 17, 38}

Symptoms. The average fungus infection commences as a slight peeling of the skin between the toes, especially the fourth interdigital space, commonly termed "scalding" by the patient. Itching may be mild to intense. Irritation and desquamation from scratching produces a serous oozing which causes white, sodden, macerated epithelial debris of varied thickness. Or there may be a slight, dry peeling of the skin with mild itching and no maceration. This chronic, intertriginous stage may persist for years without the patients realizing they possess a definite disease.

Initiating the fungus attack, or at any time during the course of a chronic infection, there may be an acute, inflammatory, vesicobullous variety. Crops of vesicles appear between and over the toes, along the sides of the feet, in the soles and occasionally around the malleoli. These may be deep or superficial, often only mildly inflammatory, mostly small, usually not uniform in size and exhibit a tendency towards clustering or grouping and spreading by peripheral extension forming circinate edges showing marginal activity. The vesicles are multilocular. They rupture early due to scratching and the condition changes to the dry, squamous type. The lesions have a gradual onset, show various stages of activity, have a bilateral but seldom symmetrical distribution and show a resistant course. In the soles and thicker skin surfaces where the vesicles are not readily ruptured variously sized groups form and extend under the surface in abscess-like clusters until eventually the entire sole may be undermined. Secondary infection may produce lymphangitis with abscess formations on the dorsa of the feet and regional adenopathies.

The nails and periungual tissues may become involved and, due to paronychia inflammation, the nails become grooved, pitted, discolored, colorless and lusterless and usually thickened because of heaped-up debris under them. When the inflammation has subsided, there is very little discomfort to the patient beyond the appearance of the nails.

Direct spread from the toes by the hands causes involvement of the groins, perineal regions and scrotum. These lesions vary from a slight vesiculation, oozing and scaling between the thighs and the scrotum to extensive raised, infiltrated, vesicular and pustular, scaling, erythematous patches extending down the thighs and onto the abdomen. These are sharply margined, intensely itching and foul smelling. This variety, called *tinea cruris*, is common in men and is occasionally seen in women.

Fungus infections of the hands resemble closely those of the feet; the hands are usually secondarily involved from the feet. There may be superficial scaling, usually between the fingers with slight or no itching. Vesicles may predominate as scattered or closely grouped superficial lesions along the sides of the fingers or deep-seated, hard, shot-like involvement of the palms, closely resembling pompholyx. Dry, scaly, slightly raised, fissured patches in the palms, dorsum of the hands or along the sides of the fingers, with or without outlying small vesicles and usually only mildly pruritic, often classified as eczema, are usually due to fungi. The nails and paronychia tissue involvement resembles that of the toes.

Toxic, allergic or sensitization reactions to local infections may produce a variety of eruptions called trichophytids. These are chiefly located on the trunk and extremities as pink or reddish, slightly scaly papules with a tendency to grouping. Rarely there may occur erythematous eruptions resembling erythema multiforme and toxic dermatoses, which may be accompanied by fever, anorexia and general adenopathy. Trichophytids are considered to be caused by both a direct dissemination of attenuated organisms by external transference and by the spread of the fungi or their toxins through the blood stream. Fungi are not found in these lesions.¹⁸⁻²⁰ They usually accompany acute, vesicobullous lesions although relative insignificant eruptions,

either superficial or deep, may produce an extensive trichophytid.^{4, 21} Some authors consider all vesicosquamous lesions on the hands in which fungi cannot be demonstrated microscopically or culturally as trichophytids while others affirm the existence of lesions called pompholyx or dyshidrosis due to toxic causes other than fungi. Trichophytid eruptions usually disappear upon the eradication of the primary foci.²²⁻²⁵

Differential Diagnosis. A differential diagnosis between fungus infections and similar cutaneous eruptions is of extreme importance because the therapeutic approach to each condition is usually more or less specific and failure with treatment often results unless each condition is treated by its correct regime. The following brief outline will list the outstanding characteristics of six entities which may be confused with ringworm. As a rule these lesions can be differentiated clinically.²²

1. *Bacterial Infections:* Vesicular, pustular and squamous eruptions on the hands and feet which are due to bacteria are usually of two varieties. One, in which the vesicles are grouped, small and superficial with the subsequent formation of erosions and superficial crusts, is impetigo caused by streptococci and contaminating staphylococci. These lesions usually occur on the sides of the feet and around the malleoli and on the dorsum and sides of the fingers. The other variety is the ordinary staphylococci infections forming ecthymatous, pyodermic and furuncular lesions. These are unresponsive to therapy as outlined for tinca but readily heal under bacteriocidal preparations as bichloride of mercury soaks and ammoniated mercury ointment.²⁶

2. *Dyshidrosis or Pompholyx:* Vesicular and vesico-squamous lesions occur on the hands and feet as toxic manifestations of causes other than fungi. These are systemic dyshidrosis or pompholyx and are characterized by deep, uniform-sized, non-inflammatory, sago grain-like, unilocular vesicles which usually appear simultaneously in one symmetrical crop or eruption and which burn rather than itch. They may coalesce into large bullae which undergo, as a rule, secondary pyogenic infections. They are of short duration and disappear in a few days with mild desquamation. There is no tendency

for circinate or polycyclic configuration. The treatment is directed towards the underlying toxicity.²²

3. *Dermatitis Venenata and Eczema:* External irritants may produce acute and chronic lesions which, particularly on the hands, are very difficult at times to differentiate from mycotic eruptions. The skin responds to irritation by the formation of closely packed, small, superficial vesicles situated on inflammatory and infiltrated bases. These rupture with the formation of denuded areas of the skin and considerable serous exudation. If the irritation is prolonged, the acute venenata becomes a chronic eczema manifested on the skin as dry, scaly, fissured patches. These eczemas have a predilection for the dorsa of the feet, hands and fingers in contradistinction to the fungus infections which are usually on the plantar and palmar surfaces.²²

4. *Pustular Psoriasis:* Pustular psoriasis, always considered an extremely rare condition, is being reported with increasing frequency due, not to an increase in occurrence, but because it is more frequently recognized and diagnosed. The primary lesions of pustular psoriasis on the hands and feet are tiny, flat, superficial, yellowish pustules which dry to form characteristic brownish, intraepidermal scabs. These, for the most part, occur in patches although they may arise singly in normal skin. There also occur reddish patches covered by varying degree of scaliness usually situated symmetrically on the thenar and hypothenar eminences of the palms and on the central parts of the soles. The nails are sometimes involved with a peculiar pitting. Typical psoriatic lesions may usually be found elsewhere on the body. These lesions are extremely unresponsive to treatment.²⁷⁻³⁰

5. *Acrodermatitis Perstans and Dermatitis Repens:* This extremely chronic, infectious dermatitis, which usually involves the extremities, may be confused with mycotic infections. It usually begins on a toe or finger as an unilateral and localized traumatic sore or suppurating paronychia. The elementary lesions are intraepidermal abscesses which unite to form visible vesicles, bullae and pustules. The nails become dystrophic, thickened, furrowed and often destroyed. There is peripheral extension producing denuded, excoriated, reddened areas

surrounded by detached epidermis forming overhanging edges. This condition is extremely resistant to all forms of therapy.^{26, 39}

6. *Syphilis*: The varieties of cutaneous syphilis requiring differential consideration from tinea of the hands and feet are maculopapular, papular and papulosquamous secondary and late annulopapular syphilids. High lights in the diagnosis of these individual syphilitic lesions on the hands and feet may be listed as follows:⁴⁰

- a. No vesicles—if vesicles are an essential part of the eruption in an adult, it is not syphilis.
- b. Polycyclic, gyrate and "broken-circle" configuration.
- c. Absence of itching.
- d. Presence of induration—the lesions of syphilis are in the skin, not on the skin.
- e. Indolence—tendency towards chronicity and mildness.
- f. The annular papular forms frequently are unilateral.
- g. Nail changes are rare.
- h. Tendency to dull color.

AIDS TO DIAGNOSIS

1. *Microscopic Examination for Fungi*: The mould fungi can readily be detected by microscopic examination particularly in lesions on the feet. Pieces of skin, preferably caps of vesicles, scrapings of sodden, white skin from between the toes or the most active appearing areas of any suspicious lesion, are placed in several drops of 20% to 30% potassium hydroxide solution on a microscopic slide and covered with a cover-slip. This is allowed to stand two or three hours, occasionally adding solution by allowing drops to run under the cover-slip to prevent drying, until the keratin is completely dissolved. The preparation may be gently heated to hasten dissolution but never boiled vigorously. When the pieces of skin are entirely soft, the cover-slip is gently pressed down on the slide until all possible solution has been expressed and the preparation is as thin as possible; the solution is usually absorbed with blotting paper as it seeps from under the cover-slip. If the skin cells are pressed to one-layer thickness, the fungus mycelium and spores may be readily identified under the microscope.

2. *Cultural Growth of Fungi*: The fungi grow rapidly at room temperature on dextromaltose media but few offices require or are equipped for this procedure.

3. *Trichophytin Skin Tests*: Pathogenic

fungi produce specific immunological phenomena which may be used for their detection and treatment. A ringworm infection causes the formation of specific resistance or antibodies. If the patient has or has had tinea, these antibodies react with the active principle of pathologic fungi or trichophytin when this antigen is applied to the skin by patch, scratch or intradermal methods with the production of inflammatory wheals or patches. When this occurs, the test is considered positive. If the patient does not have or has not had ringworm, there are no antibodies to react with the antigen, there is no inflammation and the test is negative.

The exact reliability and value of trichophytin as a diagnostic aid is still undecided. It unquestionably is an aid to diagnosis but its limitations must be kept in mind. These are the possibility of remote former infections causing positive reactions, false positive reactions due to bacterial contamination of the solution, reported occurrence of negative reactions accompanying lesions definitely known to be due to tinea, the trichophytin antigen itself causing false positive reactions in later tests, debatable specificity of the reaction and possibility of untoward symptoms as urticaria, hay-fever, eczema and general systemic disturbances which may follow its use.^{21-23, 39} Others affirm the value and specificity of the trichophytin test since it is now shown that both superficial and deep lesions are responsive, that the contaminating bacteria in the solution may be destroyed without harming the antigen and that small dilutions are more reliable and less dangerous than those formerly used.^{4, 21, 24, 31, 32}

The practical deduction to the diagnostic value of trichophytin is that it is not required for the routine diagnosis of trichophytosis as this condition can usually be diagnosed clinically and by microscopical examination. It is of value as an aid in the diagnosis of the disputed case.

TREATMENT

After several fundamental principles are understood regarding the treatment of dermatophytosis, its management is more or less routine. These may be listed as follows:

1. Therapy must be directed towards the stage of the infection, mild treatment for acute stages, medium treatment for subacute stages and severe treatment for chronic stages. The routine use of one or two prescriptions for all

stages may produce results in a small percentage of cases but the majority will be aggravated or unaffected. The main consideration is not to use strong medications for the acute, vesicular stage.

2. Adjust the medications as the stages of the infection change. Gradually increase their strengths as the condition improves but do not hesitate to return to mild preparations when there is an exacerbation or recurrence of vesicles. This may be necessary several times before the stronger prescriptions will eventually effect a cure.

3. Continue treatment several weeks after apparent clinical cure and advise application of medicines to the apparently normal skin several inches beyond evident infection in an endeavor to destroy spores and permanently eradicate the disease.

4. Personally clean the lesions, daily if possible, by opening all vesicles, trimming away all dead skin and involved nails and instruct the patient to do likewise on the days an office visit is impossible that the medications may reach the organisms.

The following routine will be effective in handling the fungus patient if it is adjusted, as indicated by the stage of the individual infection:

1. For the acute, vesicular, oozing, inflammatory stage:

a. When there is acute inflammation and it is necessary to quiet down a venenata produced by too strong self-medication, use only boric acid soaks or compresses:

℞ Sat. Sol. of Boric Acid.

Sig.: Use as soaks one-half hour four times daily or as continuous compresses.

b. Whenever there are vesicles without too much inflammation or the inflammation has been controlled, the following modified Burrow's solution is indicated:

℞ Copper Sulphate 4.0
Zinc Acetate 20.0
Liq. Aluminum Acetate q. s. ad. 240.0

Sig.: One tablespoon to each pint of water as warm soaks. One preparation may be used repeatedly. Vaseline or cold cream may be applied between soaks for burning or tingling.

c. For the groins, a calamine and zinc lotion generally gives relief in preparation for stronger medications:

℞ Prepared powdered Calamine..... 16.0
Zinc Oxide 16.0
Glycerin 16.0
Rose Water q. s. ad. 120.0

Sig.: Mop on areas as desired.

2. For the subacute stage:

a. When there are only a few vesicles, as the initial treatment or following the subsidence of the acute stage, a mild Whitfield's ointment may be used.

℞ Salicylic Acid 1.0
Benzoic Acid 2.0
Rose Water Oint. q. s. ad. 30.0

Sig.: Apply between toes as vesicles subside. When vesicles have disappeared, apply night and morning.

b. When there are no vesicles, in an endeavor to decrease perspiration, the mild Whitfield's ointment may be applied at night and the following dusting powder during the day:

℞ Salicylic Acid 1.5
Boric Acid 25.0
Starch 10.0
Talc q. s. ad. 120.0

Sig.: Dust on feet during day.

3. For the chronic stage:

a. When the lesions are squamous, dry, fissured and hyperkeratotic, stronger medications are indicated. It is advisable, before applying medications, to actually remove the thickened corneum by rubbing with sandpaper. This immediately promotes a smooth, soft, pliable skin and is very satisfying to the patient. The following crude coal tar ointment is indicated for this stage and it may contain from 3% to 6% of salicylic acid depending on the keratolytic properties desired.

℞ Crude Coal Tar..... 2.0
Zinc Oxide 2.0
Starch 4.0
Anhydrous Lanolin
Petrolatum aa q. s. ad. 30.0

Sig.: Apply continuously to dry areas.

b. The following prescription is useful for extremely resistant areas and for routine application around the toe-nails:³⁶

℞ Iodine crystals 0.6
Potassium iodide 1.0
Salicylic acid 1.0
Alcohol (50%) q. s. ad. 30.0

Sig.: Paint on areas at night. Apply dusting powder during day.

4. For prophylaxis:

It is generally advisable for the patient to take the following precautions against a continued reinfection and to guard against new infections:

a. Wear a freshly boiled pair of cotton, preferably white, socks daily.

b. Fumigate shoes and bedroom slippers by placing them when not being worn in a closed box or can which contains a saucer of U. S. P. formaldehyde. The leather absorbs the formaldehyde fumes and, when worn, furnishes additional treatment for the skin.³⁷

Röntgen rays unquestionably are of value in the treatment of fungus infections in all their stages and, when available, are used with the various medicinal procedures. Successful and permanent cures are possible, however, without their use.

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EUGENICS AND ITS RELATION TO THE COMMUNITY

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Every individual coming into the world has an inalienable right to be well born. Being well born, for the purpose of this discussion, means the possession at birth of two most precious attributes: good bodily health and a sound mind.

The needs of these qualifications are self-evident. In the first place, life in this twentieth century has become very complex: its needs become greater and greater, competition becomes very keen making the race of life more difficult and a place in the sun harder to attain. This concerns especially, the individual. In the second place, the community and State is in need of in-

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dividuals who are self-reliant, self-sustaining, right thinking and dependable. Particularly is this true of a republic such as our own where every citizen bears an equal responsibility in the maintenance of our free institutions and where every defective becomes a burden. Thirdly, life for everyone is a struggle for existence; not only for the man who earns his living by hard daily toil, but also for those who have great wealth and appear to have a life of ease. This struggle in some respects is different, but every one is exposed, in a greater or less degree, to climatic and atmospheric changes as well as to contagious disease and epidemics, which at various times in the history of civilization, have swept over the world.

These things being apparent, we must grant the need of being well born. The child has nothing to say about his advent into the world; he is here on no volition of his own, a bundle of possibilities or a bundle of liabilities, all depending upon inherited characteristics and what may be done with them by wise or foolish parents. It has sometimes been said that in order that one might be an outstanding success, he should be able to choose his grand-parents, his ancestry. Splendid if that were possible. Now let us see what he would require. From one he would arrange to derive the characteristic of thrift and industry; from another, honesty and integrity; from another, loyalty and courage; from another, common sense and good judgment; all of which, with a sound body, would make up the ideal citizen. The ability to choose one's ancestry is obviously impossible. Therefore, it follows that to promote the health and general welfare of the community, prospective parents should give careful thought to matters pertaining to their own health and, in choosing a mate, select one who might in all probability produce healthy offspring. The old saying that "like produces like" is positive and as massailable and fixed as the laws of the Medes and Persians which, you will remember, changed not.

Galton made a careful study of the laws of inheritance. He concludes that the child derives one-half its total heritage from its parents, one-fourth from its grand-parents, one-eighth from its great grand-parents, etc., the more remote ancestors contributing less and less. These interesting researches contribute much to our

knowledge of the matter but do not help to solve the difficulty of choosing one's ancestors and also seem to explain, in a way, the reason why highly gifted parents rarely beget children who are equally fortunate in their natural endowment. Therefore, given an individual who has good health, sound healthy bodily organs and a sound mind, his offspring will, in all probability be good, useful citizens of the community.

There is another side to the picture; it is a well known fact that certain diseases are directly transmissible while in others, the tendency to acquire a disease, is transmissible. In the first group mentioned, we have two most important: syphilis and alcohol. First syphilis, which may be directly transmitted by a parent. In these cases, nature tries very hard to prevent the birth of syphilitic babies and we find mothers having frequent miscarriages at the second, third, fourth, sixth month, etc. In some instances, after many miscarriages, a child may be born who soon succumbs and dies from his infection or to some malady to which he is subject. Others may grow to maturity and suffer throughout their lives with some form of nervous disorder; various anemias or a complete mental overthrow, in many instances producing an individual who becomes a ward of the state. Secondly, alcoholism plays a very important role in the health of the community. While alcohol is a useful servant, a product for which it would be difficult to provide a substitute, alcoholism is a dangerous and a deadly enemy of society. Everyone is familiar with its disease breeding, vice producing influences on the individual, making him, in many instances, totally oblivious to his duties to the family, his friends or to society. Perhaps less is known of its terrible effects on future generations. However, it might be interesting to cite one well known instance with which many are familiar: the Jukes family which lives in the State of New York, was descended from a drunken father and an imbecile mother. Twelve hundred individuals, including seven generations of this family were studied. Of this number, approximately one thousand were known to be anti-social in their behavior; every form of criminality being found, ranging from petty thievery to murder—many being mentally defective. This family cost the State of New York more than a million dollars. Besides this

vast sum which was paid by the tax-payer, it would be impossible to estimate what it cost the various communities, in which they lived, in grief and distress over a murder or other major criminal act.

In the second group, we again know certain families have a tendency to acquire certain diseases. While the disease may not be directly transmitted, there may be certain inherited organic weakness. We see in this group, cancer, diabetes, tuberculosis in families, cardiac disease, a tendency to develop arteriosclerosis, apoplexy, etc. All have seen many instances of these just cited. The problem is not only a community or a State affair, but of great importance to the individual and now, what can be done about it? David Starr Jordan has said that a good citizen is one who is able to take care of himself and then has something left for the common good and, to repeat, a republic such as ours is in great need, at all times, of good citizens. Every one knows of the burden we carry in our public institutions, our prisons, our State Hospitals, homes for the feeble-minded and epileptic; their population showing a much greater increase than is shown in the remainder of the community. The care and instruction of this group is enormous.

This situation is not alone peculiar to our own country but, according to Lord Horder, in England one person in one-hundred and twenty is feeble-minded; one in two hundred is insane; one in ten too dull or sickly to be employed in various industries. The average level of human intelligence has been shown to approximate fourteen years. Eugenics, in its final analysis has to do with an effort to raise this level of intelligence by improving the stock, that is: by improving the health, physical and mental, of parents. Improvement of the stock or the germ from which the human being springs is, of necessity, a slow process. In the mating of human individuals, normally little is thought of future generations, emotion being the guiding spirit, while judgment has but a still small voice in the transaction. We know how carefully the farmer and those who grow animals for pets, select those from which other individuals may spring. We also know how scientifically they study the laws of inheritance and how well they know how many singers they may expect when

a Hart's Mountain warbler is crossed with a canary that does not sing, all according to Mendel's law of inheritance. Other means used are first: education, and by education is meant not only teaching those things one's ancestors knew and believed, but also a liberal training which may become the basis of reasonable thinking and sound judgment. Second; a healthy environment is essential. Living conditions, food, clothing and housing are of vast importance. The crowding of slum districts, where vice and its twin sister disease reign, can and should be eliminated. Increasing the number of city playgrounds, enlarging the parks, making provision in every way possible for healthful out-of-door surroundings.

It seems at this time, that it is impossible to breed a super-man. No matter how carefully selection may take place, the descendants sooner or later, revert to the intelligence level of the community. However, there can be no doubt that education and instruction of young people in the knowledge of the laws of inheritance and the influence of certain disease processes, would, in a few generations, vastly improve this human stock. Any progress made must, of necessity, be slow but if we may be reminded of the profound ignorance and superstition prevalent during the middle ages and indeed, more recent times, then view in retrospect the more recent splendid scientific achievements, some of which have made many important discoveries matters of common knowledge, it can not be unreasonable to hope that in the next half-century, the average level of community intelligence could be raised one, two or three years.

Eugenics then is the science which teaches the control of the reproduction of the unfit and encourages the better types to greater fertility. It is a problem of many sides and many angles and while the approach may seem difficult, with common sense as the guide, much can be accomplished. The proper control of the syphilitic and the alcoholic would be a long step in the right direction. Parents should be prompt to recognize nervous instability in their children and to take steps to properly instruct and guide their growing minds. Several states have passed laws providing for the sterilization of the habitual criminal and the criminal insane about which much could be said. This seems to be a

step in the right direction. Finally, the individual should be informed of the few precepts just enumerated and taught that, for his own present good and the good of the community, he should learn something of the story of the human race.

THE COMMITTEE ON MATERNAL WELFARE

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EVANSTON, ILL.

The safety of women in labor in the best hospitals in this country is as great as in similar institutions anywhere. The maternal mortality rates in our well organized clinics are equal to those of obstetric clinics in any country. The mortality accompanying pregnancy and labor in the country in general, none the less, remains higher than it should be. It is, perhaps, not altogether fair to compare maternal mortality rates in small, compactly settled and well organized countries, like Sweden and Norway, with those of our immensely greater and much younger land. In these smaller lands no community is far from a teaching clinic or at least from a competent consultant. In some portions of our own country large, thinly settled areas are found with hospitals far apart and with few or no physicians of special obstetric training. Single states may vary widely in the efficiency of obstetric care provided for their women in different counties. These variations will be reflected in the maternal and infant mortality statistics as they appear in the reports of their boards of health. The ideal remedy for this condition would be to provide, in every community, expert obstetric attendance and well equipped hospitals in which women in labor may be cared for. This ideal state of affairs will not arrive for a long time but gestation and labor will continue.

Some attempt must be made to improve the present conditions while we wait for the changes which time will no doubt bring. For many years, in any event, most of the women in the majority of our states, will continue to be cared for by general practitioners. It is not fair to demand of the man in family practice the same familiarity with and skill in the handling of all the obstetrical problems which are sometimes presented. He must also meet medical problems in many other fields, and the incessant demands

upon his time, if he is a successful practitioner, make a minute knowledge of any special field impossible. In many communities, in our own state as in others, the general practitioner may be compelled to meet situations which would tax the skill of the specialist in his fully equipped hospital, assisted by a trained personnel. Without special knowledge, lacking trained assistance and the material resources of a hospital equipped to deal with obstetric emergencies, he cannot be too greatly criticized if, in some cases, his results are not ideal. He must, however, have sound fundamental knowledge of obstetrics and realize not only what it is wise to do but also what it is unsafe to attempt.

Hospitals of the highest type, that is, those which are used as teaching centers and therefore are staffed by men of special training, may achieve a high degree of safety for women in labor. A small number of such hospitals in our own state were found to have an average maternal death rate of 0.25%. Another group of good hospitals, not used for teaching, the obstetric work in which was done by groups of men in general practice, had an average maternal mortality of 0.38%. The average maternal mortality of our state is not as good. Certain counties have exceedingly favorable mortality rates while others have rates which are far too high. In the past three years (1933-1935, inc.) nine counties had no death ascribed to pregnancy or labor. These were all counties in which the number of births was comparatively small. The rate in different counties varies widely, the highest being 1.34% per thousand. The average for the entire state over this period of three years was 0.48% per thousand. This is an improvement over the rate for the state for the five-year period (1928-1932) which was 0.56% per thousand.

The American Committee on Maternal Welfare has been organized to try to help the doctor in his obstetric work and in so doing to reduce the maternal loss of life and to decrease ill health following pregnancy and labor. This Committee is made up of representatives from the American Gynecological Society, the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and the Section of Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association and many other interested organizations. The Chairman of the National

Committee is Dr. F. L. Adair. It is hoped that in every state there may be a state committee with a state chairman and with a membership chosen from various parts of the state, these members being men who are interested in obstetrics. The majority of states have such committees which in many have been active for a number of years. In most of the states this committee is an official one of the State Medical Society and is affiliated with the American Committee on Maternal Welfare. The Illinois State Committee hopes to aid the physicians of the State to raise the standard of obstetrics in the State in the following ways.

1. To function as a liaison committee between the medical profession and State Board of Health in its maternity program.

2. By furnishing speakers to discuss obstetric subjects at meetings in various parts of the State.

3. Outlines of lectures upon important topics may be furnished upon which members of county societies may themselves construct helpful talks.

4. Series of lectures may be given by teachers from the obstetric departments of medical schools who may, if possible, spend several days in one town or a number of towns.

5. Pre-natal clinics may be organized by the local profession for the care of women who are unable to afford proper care during pregnancy.

6. Collection and compilation of statistical data relating to obstetrical patients will give opportunity to plan preventive measures for the future.

It is far better for the medical profession to attack the problem of obstetric mortality and morbidity itself, and to give definite evidence of an intention of correcting our present deficiencies ourselves, than for change to come from some source outside our own profession.

The membership of the Illinois State Committee is as follows:

Dr. Joseph B. De Lee, Chicago
Dr. William E. Cooley, Peoria
Dr. Floyd Heinemeyer, Rockford
Dr. Paul Fox, Oak Park
Dr. Ralph Reis, Chicago
Dr. W. C. Danforth, Evanston, *Chairman*
Dr. O. H. Crist, Danville
Dr. E. E. Davis, Avon
Dr. H. C. Blankmeyer, Springfield
Dr. Milton E. Bitter, Quincy
Dr. Dale D. Smith, Decatur
Dr. H. G. Horstman, Murphysboro

Dr. Thos. B. Williamson, Mt. Vernon

Dr. J. T. O'Neil, Ottawa

We ask the cooperation and interest of those physicians in the State of Illinois who are doing obstetrics and we hope the entire profession may approve the work which the Committee proposes. A moderate amount of money will be available from the State for the payment of speakers and for traveling expenses. This will be expended with the approval of the Health Commissioner of the State. In these days when one hears occasionally the threat of state medicine it is wise for medical men themselves to meet as many of the medical problems of the people as possible, thus anticipating action which might later come from some other source.

636 Church Street.

A CASE OF SYPHILITIC PANCREATITIS

WALTER S. SIEWERTH, M. D.

CHICAGO

Clinically the recognition of syphilitic disease of the pancreas is often difficult, because the symptoms usually resemble those of some non-specific lesion, as is also often the case of syphilis of the other upper abdominal viscera, at times resembling an acute surgical abdomen. Gumma of the pancreas not infrequently presents gastric symptoms, may be slight jaundice, often a palpable mass, which may or may not be painful, also at times some loss of weight, giving it the appearance of a malignancy.

Wartlin has demonstrated that syphilis is a common cause of interstitial, interlobular and interacinar pancreatitis, and recognized the fact that gummas of the pancreas are rarely encountered, and that the diagnosis is difficult because of the inconstancy of the symptoms. In 1921, Wile was able to collect only ten cases from the literature in which complete recovery followed the administration of antisyphilitic treatment in patients suffering from syphilis of the pancreas. Maegot Franke of Germany, in December, 1926, reported a case of gumma of the pancreas, found at post mortem, in a case of left lobar pneumonia; the diagnosis was not made while the patient was alive.

Menninger of Topeka, Kansas, makes the statement that, congenital syphilis undoubtedly is a cause of diabetes mellitus in children in a large majority of cases.

This case, which I feel is of interest to report, is at present alive and working at his occupation.

On February 15, 1936, in the morning I was called to see a man, 44 years of age, about 5 ft. 10½ in. tall; weight at this time 164 lbs. He was very ill with a large carbuncle on the back of his neck with only a very small drainage opening, had been sick for 5 days in bed and appeared very toxic, with a great deal of pain at site of carbuncle.

Past History: the usual childhood illness; no operations.

Family History: no history of diabetes in the family, father-in law died with tabes. Nothing else relating to the case.

Veneral History: Both G. C. and lues denied.

Marital History: Married for 15 years; no children and no history of miscarriages from his wife.

Occupation: Salesman. Patient was admitted to the Lake View Hospital that morning with a temperature of 101½, P. 110, R, 26.

Urine: Sp. Gr. 1030, acid, clear; sugar, 4 plus; trace of albumin; diacetic acid and acetone present. Blood sugar; 222 mgms.

Blood test; Wassermann 4 plus and also Kahn 4 plus, R.B.C. 4,800,000, W.B.C. 13000. Hemo, 86%, normal differential. Patient was very drowsy, but had been taking 4 to 6 allonal tablets daily for the past 3 days. He was given 20 units of insulin t.i.d. and operated on the next day under nitrous oxide anesthesia. Crucial incision with drain inserted and moist 1-3000 bichloride dressings applied every 6 hours.

He was given increasing doses of insulin with proper diet until 60 units of insulin were given t.i.d. before his urine was sugar free and then the dosage of insulin was gradually reduced. This, with heavy doses of potassium iodide intravenously and per mouth, and also mercury and bismuth injections intramuscularly. He left the hospital after 3 weeks with a normal blood sugar, and taking only 2 units of insulin once a day before breakfast, up to April 14, when the urine was negative and remained so after discontinuing the insulin but still taking antiluetic treatment. Carbuncle was entirely healed by March 20, 1936, and patient went back to work at that time. He feels fine and his weight at present is 183 lbs.

He tests his urine 1½ to 3 hours after each meal and since April 14, 1936, has had no return of sugar in the urine, with a normal blood sugar and is receiving antiluetic treatment as specified. The carbuncle had the appearance of a tertiary lesion, however no mass was evident near the pancreas or anywhere, no gastric symptoms, no jaundice, so that I feel I was dealing with a syphilitic pancreatitis and not with a gumma of the pancreas. This patient never had any cord or brain symptoms, spinal puncture was advised but not accepted.

After close questioning, when the findings were positive, patient admitted a sore on the genitals 17 years ago, which he states at that time the doctor pronounced non-syphilitic and no treatment other than local was given. Blood Wassermann and the Kahn tests on his

wife are negative at present. Spinal puncture has been advised but up to the present it has not been done. The patient was last seen by me to receive specific treatment on June 20, 1936, and is in good health.

CONCLUSIONS

1. It is well to do routine Wassermanns on all cases.

2. All symptoms pointed to a carbuncle with a diabetes mellitus as the underlying cause, which I now believe was a syphilitic pancreatitis.

3. Even after requiring large doses of insulin to begin with, it was only a comparative short time under specific treatment that insulin was no longer necessary.

4. And lastly this man is again useful to society and able to go back to his occupation.

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DR. JOHN ZAHN, PIONEER GERMAN-AMERICAN PHYSICIAN

CLARENCE A. EARLE, M. D.

DES PLAINES, ILL.

The subject of this paper was not an example of the traditional country doctor. He took no interest in local, state or national affairs. Nor did he discover anything new in medicine or surgery. I am presenting this sketch of his life because of his extremely unusual personality and character and because he does illustrate a type of early German physician that some of us older American doctors used to meet but which now has all but disappeared. I refer to the attitude of many of the early German medical men toward American trained physicians and the almost contempt in which they held everything medical in this country.

Dr. John Zahn, son of a Lutheran preacher, was born in Pomerania, January 1, 1835. He passed his gymnasium and came to America. He fell in with Dr. Theodore Hoffman of Niles, Cook Co., Illinois, who helped him through Rush Medical College, where he graduated in March, 1863. He practiced a while with Dr. Hoffman and also in Caracas, South America, and then

located in Elgin. An Elgin druggist told me that he had a large practice, writing 75 to 100 prescriptions a day. It was his custom to spend a few months every few years in German universities. He studied in Jena, Tübingen, Vienna and Rostock. Sometime in the seventies, while practicing in Palatine, he married Ernestine Mergler, a daughter of Dr. Mergler, of Wheeling, Illinois. Dr. Mergler was a graduate of a Bavarian university. Another daughter was Dr. Mary Mergler, widely known years ago as a gynecologist and professor in the Woman's Medical College in this city. From all reports Ernestine Mergler was a most talented, cultured, and beautiful woman. The circumstances of her marriage to Dr. Zahn and the outcome of this marriage are so unusual that I shall give it as I got it by word of mouth from their mutual friend, Dr. Hoffman. It must have been on his return from one of his European trips that Dr. Zahn landed at Dr. Hoffman's home in Niles; and without much ceremony he told the doctor that he must have a wife, and asked him if he would loan him a horse and buggy to go up to Wheeling to Dr. Mergler's. The doctor said, "Certainly." The result was his marriage to this beautiful, talented Ernestine Mergler. After the festivities following the marriage ceremonies were over and the guests had departed, with a wave of his hand, he said to his wife. "You go to your room and I'll go to mine." They never lived as man and wife. Some months later she got a divorce.

He continued to practice at Elgin, Palatine, or Niles. Late in the eighties he had accumulated enough to provide for his future and he left for Germany, there to end his days. He was in Germany in 1890. In August of that year the 10th International Medical Congress met in Berlin. One day at one of the general assemblies every member found a twenty-four page pamphlet in his seat. The title of this pamphlet was, translated into English, "Student, College and Doctor in the United States," by Johannes Odontius. It was a most sarcastic, ill natured attack on student, colleges and doctors of this country.

He states, at the very beginning, that his object for publishing the article was that the Berlin University had announced that the possession of a transatlantic diploma would not

entitle the possessor to matriculate in their university and it was his hope that other universities, after considering his article, would follow the example of Berlin.

Time will not permit me to give much of what his pamphlet contained. On page one he says that "While the vast majority of the transatlantic members of this congress are ignorant of German institutions, working methods, etc., nevertheless each one of these gentlemen has an easily compiled 'paper' in his pocket with which he expects to invigorate the obsolete European Science." Let me mention that Lusk, Parvin, Senn, Wood and Billings were members of this congress. In another place he says that if the founders of Mormonism hadn't injected polygamy into their articles of faith that it might have become the national religion of the New World. While much of what he said was probably true, the time and place of its distribution; its biting, sarcastic, vindictive spirit were barbarous. It must have been as embarrassing to the German members of the Congress as it was humiliating to the American members.

Early in 1891 he met and married a daughter of a German pastor. As I stated, he had saved enough to care for himself but not enough for a family, so back to America he came, locating in Barrington, where his only child was born. His old clientele flocked to him again. During his last sojourn in Barrington I had located at Des Plaines. Because he was so widely known I had to call him into consultation now and then. He had the reputation of calling on any doctor's patient when summoned and of throwing the attending physician's medicine out of the window. The first time I met him was at a case of pleurisy in a young man who was hit by a plow handle. He continued to run a little fever and I thought there was a little effusion. One day the father told me that Dr. Zahn would be there the next day to see his boy. I drove to the station with horse and buggy, expecting to take him out to the case. He hardly noticed me and refused to ride with me. He got into the open milk wagon with the farmer, although it was raining. I led the way to the patient's bedside. With a somewhat haughty air, he said, "Are you through with your examination?" I said, "Yes, excepting the introduction of the needle." With characteristic self assurance he

proceeded to percuss the chest. Because of the small amount of fluid the impaired resonance was not very striking. As he went over the chest again and again his confidence faded and looking up to me he said, "You don't say anything, doctor." I said, "You haven't asked me anything." Finally he said, "Try your needle," which I did. He became more friendly and rode back with me to the station. On the way back he confessed that he expected to find that I didn't suspect what was the matter with the boy and he was going to humiliate me in the presence of the family. At another time after seeing a case I took him to the station. I noticed a neighboring doctor also waiting to take the train. I said, "Let's go and speak to Dr. ———." He refused and with a look of disgust remarked, "How can you speak to him?" He will be the subject of my next book."

In a comparatively short time he accumulated some more U. S. bonds and with his family returned to Stuttgart, where he died in 1915.

After his death I had some correspondence with his wife and in 1925 visited her in Stuttgart. Apparently time and physical weakness had not lessened his combative spirit but a residence of twenty years in Germany after he had lived in the U. S. had changed his attitude toward America.

It seems that some time during his residence in U. S. he had taken out naturalization papers. His wife told me that after the breaking out of the Great War, the German Government got after him to renounce his American citizenship. This he absolutely refused to do. He was compelled to report at intervals to the authorities until he got so weak he couldn't go. Before his death he made definite arrangements for his funeral. One of his last requests was to have the U. S. flag on his coffin. This to me is significant. I have lived all my life among foreigners. I have known hundreds of Europeans to come to this country and amass wealth but I have never known half a dozen to go back and live permanently in the fatherland. I recall a Danish couple who sold their farm in Iroquois Co. and went back to Denmark. They were gone but a few months when they returned. Questioned by the druggist for whom I was working they said that "Denmark wasn't what it used to be." The druggist said, "Denmark is what

it was but you are different." A few years ago a neighbor of mine sold his belongings and went back to Germany. He was back in less than a year. Some one who knows foreign life better than I do may be able to explain this.

Dr. Zahn's personal appearance belied his preverse nature. He was of medium height and erect in stature. He was always faultlessly dressed. His features were classical. His beard and bushy hair were kept trimmed by a certain barber in Chicago. His English was perfect without a trace of foreign accent.

SECURING PERMISSION FOR AUTOPSIES

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The importance of obtaining autopsies on deceased patients should need no emphasis for those who are to seek permission. A half-hearted appeal not backed up by the seeker's firm conviction of the humanitarian and scientific value of post mortem examination is almost certainly doomed to failure. First, then, those who want autopsy permission should give the definite impression of firmly believing in its worth.

Relatives Pleased. The petitioner, however, should realize that consent is allowed in direct proportion to the feeling of the relatives of the deceased that everything possible in the line of treatment, care and attention was done for the patient before death. The relatives must be made to feel confidence in the whole hospital personnel and the work it is doing. In other words, they should feel obligated by the fact that hospital employees and attaches have gone out of their way to leave nothing undone that might have been of aid.

Let us look at some of the ways in which this feeling may be engendered. It must be remembered that a discourtesy on the part of anyone, however remote from the immediate welfare of the patient, will create an unfortunate impression. A polite and deferential doorman, an information clerk who is more than automaton, an elevator operator who gives courteous, helpful directions, a maid who has a cheery, solicitous manner, a technician who is careful, alert and sympathetic, all these contribute to the general

good impression that quite possibly would tip the balance in favor of consent.

Nurses' Role. A little more apparent is the role played by the floor superintendent of nurses and the floor nurses in winning the good will of the relatives. These employees have more contact with the case and the impression of service that they give is therefore somewhat more noticeable. The special duty nurse can be exceedingly helpful. Her contact with the case is practically constant; if she is astute, she learns to know the family and their idiosyncrasies very well. She herself should be thoroughly convinced of the scientific necessity and efficacy of an autopsy. Often a favorable, well chosen word at the appropriate time from her will turn the tide favorably for the solicitor.

Internes' Importance. The internes' duty toward creating a concessive attitude on the part of the relatives is quite manifest. Extra time spent with the patient over and above that required by the medical aspect of the case pays excellent dividends in securing a permit. Particularly should he be present or immediately available during the last few hours of life. In such a time of strain for the relatives, the intern who has given constant attention and sympathy has done much toward soothing and placating them, paving the way for the request.

House Physician. Analogous to the role of the intern is that of the house physician. His added experience and his position of responsibility in the absence of the attending physician as well as his acquaintance with the case make his availability and helpfulness extremely important. Often he is the person designated to secure permission and his success will be dependent on the favorable impression he has made.

Family Physician Paves Way. The family physician and the consulting physician, if one be present, know the case thoroughly and often are quite well acquainted with the family and their possible attitudes. Even if neither one of these men is present to make the request for autopsy, they often can outline an approach to be used by the one who is to seek authorization. With tact and diplomacy the way may be paved by the family physician.

Plan of Procedure. Having made efforts to establish this feeling of cooperation on the part of the relatives, let us consider the possibilities of a plan of procedure.

Never Leave to Chance. The responsibility of asking for necropsy permission should be clearly defined and united. It should not be left to chance, that is, just anyone who happens to be present at the time the request should be made.

Someone Responsible. With this in mind many hospitals have found it feasible to make the house physician directly and solely responsible. His availability and his intimate knowledge of the case make him especially well fitted for this task.

In other instances the full time pathologist is designated for the all-important role of petitioning the relatives for signature on the permit. His years of experience, his thorough conviction of the importance of autopsies, and his position of authority well equip him for the assignment of making the request for consent to examination.

Often the attending physician is well adapted to the task by reason of his dignity, his tact, and his personal knowledge of the case and of the psychology of the family. If he is to undertake this duty, he should make a distinct effort to be present or readily available at the time of death or immediately afterward.

School of Instruction. Should the responsibility be allotted to internes, it is of utmost necessity that they be entirely cognizant of the importance of autopsy examination and that they be thoroughly instructed in the essentials of the procedure. Frequent meetings should be held for instruction and discussion to be presided over by the pathologist, the hospital superintendent, a senior attending physician or someone of equal authority and experience. An informal airing of specific problems at these meetings will often bring forth distinctly helpful contributions to methods of approach.

Notify Relatives. With the responsibility of the role of petitioner established, it is well for him to remember the importance of notifying relatives of the patient's critical state. This notification should be adequately prompt to allow ample time for reaching the bedside of the patient and for adjustment on the part of the family to the idea of the imminence of death. This makes the succeeding attempt at securing permission for post-mortem examination a little less of a shock to the bereaved family. A straightforward statement of the patient's condition in a tactful manner is best made by the resident physician. This can well be accompanied by a

courteous offer of extended visiting privileges. This offer, often anticipating the relatives' wishes, does much to instil an appreciative attitude.

General Essentials. Now let us enumerate the general essentials to be considered in making the request. In general and wherever possible this request should be made in a quarter to a half hour after death. The initial shock of bereavement will have subsided somewhat and the time has come for the material arrangements that are necessary. The doctor should unostentatiously and quietly ask as few of the family as possible to come with him to a room apart from the patient's room, remembering that his chance of success is almost always inversely proportional to the number of persons interviewed. This room should be apart from the normal hospital activity and the doctor should make every effort to separate from the minds of his audience a feeling of the presence of sickness and its connotations of unpleasantness. Whenever possible only the person whose signature is required should be present. It is much easier to convince an undecided individual when all extraneous suggestions and attitudes are absent.

Working the Plan. The solicitor should present an appearance of dignity, sympathy and a genuinely helpful attitude. The conversation is best opened by asking questions about the case. From both the questions and their answers can usually be found a basis for the request. In discussing the case the doctor should be especially careful to use non-technical language without too obviously doing so. He should let the relatives be aware of his assumption of a good deal of intelligence and enlightenment on their part. A great deal of harm can be done by seeming to talk down to the level of his listeners and much good will can be engendered by giving them the feeling of intellectual parity.

Tact—Diplomacy. In this interview it is of vital importance not to give the impression of haste. The doctor should take time to explain all treatment and answer all questions carefully with a subtle obviousness in his carefulness. It is time well spent, for it is important in results procured. Each case presents a psychological problem in itself; as the interview progresses, the solicitor should analyze this problem and then on the basis of his analysis he is to select the appropriate argument or arguments. It is wise

to anticipate and answer all possible foreseen objections before they are voiced, thus creating a positive rather than a negative attitude. The fact that few objections can be raised by the relatives often makes them unconsciously feel that they are not being persuaded against their will. It is unwise to use the terms "autopsy," "necropsy," "post mortem," because of their unpleasant connotations in the lay mind; the phrase "examination of the body" should be substituted.

Above all, is it important never to seem to exert pressure. Although we use the analogy of the salesman, who is good because he believes firmly in the worth of the product he is selling, to emphasize the importance of the conviction of the necessity of autopsy to be successful in obtaining permissions, nevertheless, we do not borrow his "high pressure" methods but instead assume a quiet, convincing, dignified demeanor quite without overt pressure.

Valid Arguments. With the interview well under way we shall next consider arguments that may be used in its course. In general, the more specifically applicable to the case in question the argument can be made, the more efficacious is that argument likely to be. One of the most telling appeals is based on the necessity of autopsy for filling out insurance papers. The autopsy is a positive proof of claim in the case of a policy with certain limiting features. The autopsy furnishes conclusive information in a very short time that will expedite insurance payments in general—often a very important phase that can be tactfully suggested. In the case of an accident or other exigencies of a medicolegal aspect which require suit to be brought, a thorough proof of the cause of death as established by autopsy is invaluable.

If the case is one with a familial or hereditary tendency or even the suspicion of it, the autopsy may contribute valuable information that will have a bearing on the well being of the posterity in the family. This point can be amplified according to the conditions of the case. At times lay curiosity can be discreetly turned toward some unexplained factor in the patient's disease or condition which could be established at autopsy. The solicitor would do well to present the autopsy idea from the point of view of an ordinary "operation" done after death to help others instead of an antemortem one to aid the patient. The examination can be construed as a

courtesy extended free of charge by the hospital. Had the patient died outside the hospital and for one reason or another an autopsy desired (but not required by law—coroner's case), there would have been a fee of from twenty-five to fifty dollars. Necropsies are not at all unusual and are often requested by the deceased himself before death. In many countries they are required by law. Many outstanding men have been examined after death: Columbus, Napoleon, Lincoln, Garfield, McKinley, Calvin Coolidge are examples.

Value to Science. As human beings the relatives have a duty to humanity in general. Their consent to the autopsy procedure will further medical knowledge and give aid to scientific research which has been endowed but cannot proceed without the background of knowledge based on autopsy findings. Vital statistics which are exceedingly important in any public health measures affecting individuals, communities and countries, are valuable only in direct proportion to their validity. These statistics are made valuable when they are based on the accuracy that is provided by the exactness of reports confirmed by autopsy. If the disease is really rare, the relatives would be letting an exceptional opportunity for study slip by withholding their permission. If the treatment of the disease is in the process of development, an autopsy would serve as an excellent means for the evaluation of the treatment, in finding out how far it was successful and where it failed. And finally, the relatives may be made to feel that they are giving the deceased an opportunity to carry out in death the generosity and thoughtfulness of the welfare of others that he so constantly displayed in life.

Counterarguments Answered. The family will of course present counterarguments. A few of them with their logical answers are here anticipated and set down:

"Let someone else do it." Progress would be cut short if everyone took that attitude. It is only by the knowledge obtained in the past that we have progressed as far as we have in the present. It is the family's solemn duty to help the future.

"The body will be disfigured." The examination is done by means of a surgical incision which later is carefully closed just as if it were an operation. The procedure enhances the appearance of the body as it drains out the blood, prevents

purpling by clotting and permits better circulation of the embalming fluid.

"It is a mutilation to the body." It should be regarded as an operation which would certainly never be refused on the grounds of mutilation.

"This is just an ordinary case and nothing can be learned from it." Correlating clinical symptoms with the pathological findings at autopsy is always important. No one can predict what great observation or discovery might be made on the most routine piece of work. There is much left to learn even about the normal human body.

"The deceased would not have consented." The deceased would probably have been more than eager to help others who suffer and are afflicted as he was.

"The deceased has suffered enough." This examination would cause him no pain. But it is quite likely through your consent to aid thousands of others who are suffering and will suffer as he did.

Religions Favor Scientific Progress. "Our religion forbids autopsies," is a statement long past obsolete. In the case of the Jewish religion many eminent Jewish leaders including Rabbi B. L. Levinthal, Dr. Jacob Z. Lauterbach and Dr. Charles D. Spivak, have given full approval to post mortem examination. They maintain that an examination to help others is an honor rather than an indignity to the dead.

Monsignor D. F. Dunne of Holy Cross Rectory says: "An operation after death for the purpose indicated—the furtherance of scientific knowledge—I can see nothing which offends the respect and reverence which the Church has always demanded for the body, whether living or dead. It is needless to say that proper consent must always be obtained."

It would be well to contact Protestant leaders in a community, for here again the minister enjoys the trust and confidence of the family. A remark from him favoring a post mortem examination may weigh the balance for permission.

Rt. Reverend George Craig Stewart, Bishop of Chicago, in this connection says, "From our point of view there are theologically no objections. If a body be reverently operated upon after death, I can see no difference between that and a reverent operation during life, providing always, of course, that the reason for the operation is purely scientific research."

Undertaker. Another member of the com-

munity whose favorable attitude is all-important is the undertaker. His good-will may insure future permissions. His assurance to the family that the appearance of the body will not be altered often wins a consent. To guarantee the undertaker's good-will, strict cooperation with him is essential. There must be a definite specified time for delivery of the body agreed upon followed by scrupulous promptness in that delivery. The undertaker's task is expedited by prompt delivery of the death certificate. Care should be taken to restore the body to the condition as near normal as possible. Conferences to iron out difficulties should be frequent and subject to call by either the doctors or the representatives of the undertakers.

CONCLUSION

A lively interest in autopsies by all concerned should be sustained. To increase the number and percentage of autopsy permissions is the object of this paper. The plan is outlined. Let's work the plan. The result can be nothing short of success. The science of the great healing art, "Medicine," is thereby assured of enhanced and continued progress.

Much of the material herein was obtained from reprints and pamphlets by the American Medical Association, the "library service" of the American Hospital Association, and letters in answer to inquiries from the following hospitals: University of Minnesota, Minneapolis; Barnes, St. Louis; The Grace, Detroit; The California, Los Angeles; St. Luke's Chicago; Massachusetts General, Boston; Henry Ford, Detroit; Michael Reese, Chicago.

Read before entire Staff of Woodlawn Hospital, Chicago, June 5, 1936, as a contribution to stimulate additional interest in raising autopsy percentage.

INCAPACITATING CHOLELITHIASIS IN A MALE AGED 20

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This case report calls attention to the fact that cholelithiasis may exist in young people with incapacitating results. An unfounded view is prevalent that this disease belongs to middle or late adult life, but gallstones have been found at all ages from infancy up and even in fetuses.

In this case, attacks of right upper quadrant abdominal pain began at the age of seventeen years. They were accompanied by nausea and vomiting. They gradually increased in frequency until they became daily occurrences, making it impossible for the patient to work. At opera-

tion, on December 2, 1935, in the St. Francis Hospital, a cholesterol stone about 12 mm. in diameter was found impacted in the cystic duct. A small amount of mucus and gravel was found in the cavity of the gall-bladder. Cholecystectomy was followed by uneventful recovery, and the young man is now enjoying excellent health.

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THE MEDICAL SIGNIFICANCE OF UNRECOGNIZED PERFORATED PEPTIC ULCER

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Until very recently perforation of a peptic ulcer was looked upon as a fatal catastrophe unless recourse was had to operation. For centuries the post-mortem repeatedly attested to the fact that a ruptured ulcer resulted in death, that when a patient recovered from an acute abdominal illness which clinically resembled perforation the original diagnosis was questioned and generally abandoned. Since spontaneous recovery of the patient in the presurgical period precluded the possibility of demonstrating the presence of a ruptured ulcer the teaching that a perforation was invariably fatal became axiomatic. Even the astute German clinician and pioneer gastroenterologist, Leube, stated when perforation occurs the only treatment in most cases is to induce euthanasia. More recent authorities were so deeply imbued with the precepts of the older clinicians that no other possibility than death in cases of perforation not operated on was even entertained.

In 1921, Dr. R. T. Vaughan and I began to use the x-ray to demonstrate the presence of pneumoperitoneum in patients presenting the picture of perforated ulcer. The ease with which free air in the peritoneal cavity could be visualized led us to employ the x-ray in cases

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of acute abdominal pain where the clinical diagnosis was doubtful or obscure, as well as in the examination of patients with the classical picture of ruptured ulcer. In the course of our study we learned that the presence of a spontaneous pneumoperitoneum in a patient with a compatible history was pathognomonic of perforated peptic ulcer. This belief has been confirmed by subsequent experience with several hundred cases which we have observed and by the studies of others. (See Vaughan and Singer.^{1, 2})

A certain number of patients who had evidence of spontaneous pneumoperitoneum and a history compatible with ruptured ulcer were for one reason or another not operated upon but nevertheless made an uneventful recovery. Generally the cause for omission of surgery was refusal of the patient to submit. At the time of admission to the hospital, the hyper-acute symptoms of onset had subsided and the patient was relatively comfortable. As a matter of fact, several of the patients argued that since they withstood and survived the intense pain, the residue of mild pain which could in no way compare with the agony of onset would not hinder recovery. They, therefore, concluded that they did not require operation. Most of these patients proved correct for they left the hospital in a few days fully recovered from the perforation.

The conclusions drawn from our x-ray studies lent support to the observations made during the course of a concurrent clinical study. With regard to spontaneous recovery from perforated ulcer, we had noted from time to time, patients who at laparotomy showed incontrovertible evidence of recent perforation, i. e., food particles in the abdominal cavity but in whom no actual opening could be found by the surgeon. In spite of closure of the abdominal wall, without drainage of the peritoneal cavity, these patients generally recovered. In other instances a recent, closed-off perforation was demonstrated at operation, the sealing resulting from coagulated fibrin or from plastic exudate agglutinating the stomach with a tag of omentum or with the liver or the gallbladder. In many of these patients the adhesions were not disturbed and the operation was ended as an exploratory one. Nevertheless, the patients generally recovered, having withstood not only the effects of the perforation but also the shock of the surgical procedure. In still

other cases the occurrence of spontaneous recovery was proved by errors in diagnosis on the part of the surgeon. For instance, a diagnosis of gallbladder disease is made in a patient with acute upper abdominal pain and a conservative policy followed. A week or ten days later, following the subsidence of the signs of acute inflammation, laparotomy is undertaken with the intention of extirpating the gallbladder. To the astonishment and chagrin of the operator the biliary apparatus is normal and evidence of a recent, closed perforation plus an organizing peritonitis is found. It frequently happens that a patient recovers from an appendectomy performed through a lower right quadrant incision where the history is one of violent, sudden pain at onset. The surgeon encounters an appendix in which the inflammation is limited to the serosa and also a thin, turbid, bile-stained fluid in the abdomen which he fails to recognize as gastroduodenal leakage. Appendectomy is performed and the abdomen closed without drainage. Nevertheless, many of these patients whose upper abdomens were not visualized at laparotomy recover from the perforation in spite of the appendectomy.

Based upon our studies both x-ray and clinical, we gained the distinct impression that perforation of peptic ulcer with spontaneous recovery was a rather common event. In order to obtain some idea of the relative incidence of recovery without operative closure of the ulcer I made a careful search among all the patients with atypical abdominal symptoms admitted to the Cook County Hospital during an eighteen month period beginning with the spring of 1928. I succeeded in collecting forty patients in whom the diagnosis of ruptured ulcer seemed warranted and in whom spontaneous recovery followed. (See Singer.³) During the same period of time seventy-three perforations were readily recognized and operated upon or came to autopsy. Assuming for the sake of argument that none of the patients who were treated by surgery would have survived if operation were omitted, the percentage of patients who recovered from perforation spontaneously is still quite substantial. It should be borne in mind that the overwhelming majority of the patients who recovered without surgery had small perforations with limited leakage such as will be described later.

The idea that perforations which prove benign do so by virtue of the fact that the leakage occurs slowly and thereby allows sufficient time for barriers or a sac to form was soon dispelled by evidence accrued from our studies. The term "slowly leaking ulcer" is a myth and should be deleted from medical texts. Practically all actual perforations take place suddenly and instantaneously and furthermore the rupture occurs into the free abdominal cavity and not into a preformed sac. The barriers which form about an ulcer, *follow* and do not precede rupture. The walled-off abscess found in connection with perforated ulcer represents an attempt on the part of nature to circumscribe escaped infectious material which suddenly entered the peritoneal cavity. The evidence for the above statements is obtained from x-ray, surgical and clinical sources. With the fluoroscope it is observed that air which is released from the stomach soon after perforation is invariably found *free* in the peritoneal cavity. With change of the patient's position the gas shadow can be made to shift to any portion of the abdomen. If the opening of the ulcer communicated with an enclosed, preformed sac, the air would remain localized and fixed in one position.

Evidence against the assumption of a preformed sac is adduced also from the surgical side. Whenever a patient is operated upon for a so-called subacute or slowly-leaking ulcer the exudate and adhesions judging from their appearance are of the same age as the perforation as determined by the date of onset of violent pain. This observation indicates that the adhesions in the neighborhood of the ulcer represent the reaction of the peritoneum to the irritating fluid which actually escaped from the stomach or duodenum. From the clinical standpoint also, evidence for sudden rather than subacute perforation is available. In a study of twenty-five patients with perigastric (including subphrenic) abscess of ulcer origin studied by Dr. P. Rosi and myself⁴ we were able by pertinent questions to elicit a history of sudden, annihilating, more or less diffuse, abdominal pain at the onset of the illness in twenty-four. Many patients failed to volunteer the information relative to the onset of symptoms since a period of comparative comfort often intervened between the initial violent symptoms and the subsequent manifestations caused

by the abscess. Many of these patients were believed to be suffering from "silent" or "subacute" perforations simply because the examiner failed to inquire into the early symptomatology. We, therefore, concluded that with few exceptions ulcers which perforate do so abruptly and that extravasation occurs into the free abdominal cavity.

In attempting to classify the cases, we realized that the clinical picture immediately following the onset of perforation is more or less constant. However, after the initial manifestations of rupture occur the picture becomes diversified. In some instances, the symptoms are quite fulminant and the patient fails to recover from the state of shock initiated by the rupture. Death frequently occurs within a few hours. In a second group the picture is of the classical type, i. e., a progressive suppurative peritonitis which proves fatal within a few days. In a third group, the violent pain and the marked tenderness and rigidity gradually abate after a day or so and only mild symptoms persist for a variable period. Spontaneous recovery, preceded frequently by surgical evacuation of an abscess, is quite common in this group. In still another group, viz., the fourth, the intense symptoms of onset are followed within one to a few hours by rapid abatement of symptoms and early complete spontaneous recovery.

The only logical explanation for the different clinical pictures in the post-perforative phase of the disease is the variability in the quantity of extravasated fluid which enters the free peritoneal cavity and the rate of entrance. In some instances where the perforation is a large one, there is a veritable gush of gastroduodenal content into the abdominal cavity the instant rupture occurs. The amount of extravasated material is large and the rate of escape is very rapid. At the other extreme is the pin-point to pin-head sized hole which permits leakage of only a very small amount of thin liquid at a greatly retarded rate. The situation with regard to the symptomatology, course and prognosis of ruptured ulcer is somewhat analogous to that observed in coronary thrombosis in that, other things being equal, the symptoms following onset and the outcome are determined by the size of the vessel which is occluded. The smaller the vessel the less persistent are the symptoms of onset and the earlier is the recovery and conversely, the larger the

caliber of the involved vessel the more serious is the catastrophe.

Where the diameter of the perforation is quite small, nature attempts to limit the leakage by sealing off the aperture. Consequently, after a minimal quantity of extravasation has occurred, the fibrinous exudate coagulates and covers or plugs the adventitious gastroduodenal opening or else aids in attaching a neighboring structure or viscus to the defective site of the serosa. The soiling of the peritoneum although accompanied by violent symptoms is readily coped with by the protective properties of the peritoneum. As a result, the symptoms of peritonitis are of only brief duration and a few hours following rupture the signs of inflammation are practically absent. If the patient is seen for the first time a number of hours following rupture, instead of presenting the classical picture described in the text-book, he will appear relatively comfortable, except perhaps for momentary sticking pain felt on motion. Physically the patient will present only slight to moderate tenderness and rigidity limited to one abdominal quadrant. The temperature, pulse and respiratory rates are likely to show little if any change from the normal. Since the usual picture of a diffuse, progressive peritonitis is not encountered shortly after perforation in the cases with minimal leakage but is more or less effaced and difficult to recognize, Dr. Vaughan and I⁵ have applied the term "*forme fruste*" to designate the chief difference from the classical description. All transitions between the fulminant and *forme fruste* types occur, the quantity and rapidity of leakage being the determining factors. It may be worth while to reiterate that the symptoms of onset of all types of perforation are more or less identical with the possible exception that the larger the perforation, i. e., the greater the initial peritoneal soiling, the more intense are the symptoms of shock. However, this is only relative. The symptoms following the occurrence of perforation are the important ones in deciding the type of rupture, prognosis, etc.

The value of a knowledge of the facts pertaining to perforation of peptic ulcer with spontaneous recovery should be apparent to every medical man. In the first place, the added information enables him to avoid misdiagnosis at the time of and immediately following rupture. Secondly, it permits the physician to recognize certain complications and sequelae

which would otherwise defy elucidation. In the early stages, particularly if the patient is not seen in the first day of the post-perforative course a non-surgical condition such as acute gastritis, acute cholecystitis, gastric crises of tabes, pneumonia, diaphragmatic pleuritis, coronary thrombosis, etc., is frequently diagnosed. Since spontaneous recovery often ensues and operation is not performed, the original diagnosis is never questioned. In former years acute alcoholic gastritis was a frequent diagnosis at the Cook County Hospital in patients with an alcoholic breath, acute upper abdominal pain, tenderness and rigidity. Accordingly, these patients were treated conservatively and frequently recovered. Since learning about spontaneous recuperation from perforation we have been operating upon those alcoholics who present suggestive evidence of an acute condition in the abdomen and generally find a *forme fruste* perforation. I shall not enter at this time into the question of the direct and differential diagnosis of ruptured peptic ulcer in the early post-perforative stage, as I have covered the subject relatively recently in another publication.^{6, 7}

The chief purpose of my present discussion is to bring to the attention of the profession one phase of ruptured ulcer that I previously neglected to deal with, viz., the complications and sequelae of perforation not operated on followed by spontaneous closure. A brief consideration will suffice. During the stage of complications the presence of an intra-abdominal abscess proves baffling unless the history of a previous rupture is obtained. If the patient presents himself for the first time two or three weeks after rupture he is likely to omit the story of sudden, atrocious pain unless specifically questioned. In the series of twenty-five cases of intra-abdominal abscess studied by Dr. Rosi and myself,⁴ we succeeded by pointed interrogations in obtaining an accurate account of previous symptoms of acute perforation in all but one patient. In the routine histories, however, only an occasional chart included any reference to the acute pain of onset.

The errors in diagnosis include thoracic, retro-peritoneal and pelvic as well as abdominal and general affections. When sharp, stabbing pain synchronous with respiration and referred to the shoulder region appears and is associated with an audible and palpable friction rub, acute fibrinous pleuritis is generally diagnosed. The

exudate, however, is chiefly subphrenic and is of ulcer origin. Due to collateral inflammatory edema, a subphrenic abscess frequently becomes associated with a supradiaphragmatic serous effusion. A pleurisy with effusion is then diagnosed and since thoracentesis yields a clear fluid, the thought of subphrenic suppuration is completely dismissed. Upward displacement of the diaphragm due to free intraperitoneal air plus a certain amount of meteorism leads to compression of the lower pulmonary lobes, limitation of excursion of the lungs and to an increased respiratory rate. With the presence of fever due to the residual infection the picture of pneumonia is closely simulated.

There are a number of local and systemic diseases which are erroneously diagnosed when the cause of illness in reality is an intra-abdominal complication of perforated ulcer. Gallbladder disease is frequently assumed when a subhepatic abscess or phlegmon is present. A cholecystectomy is performed unnecessarily, since the gallbladder is merely the innocent victim of infection per extension. Abscess in the lesser peritoneal cavity following perforation of a posterior wall ulcer generally directs the clinician's attention to the pancreas or to the spine. Perigastric abscess is often mistaken for a new growth of the stomach or colon particularly when the infection is of low grade and associated with marked granulation tissue production. In addition to local (intra-abdominal) manifestations, unrecognized perforation may lead indirectly to systemic symptoms of sepsis. A liver or other abscess, produced by a perforated ulcer which healed spontaneously may give rise to chills, fever and sweats and defy diagnosis until disclosure at the operating or post-mortem table. The author has observed a patient who presented himself four days after the onset of acute abdominal symptoms. Perforation of an ulcer was not recognized and a dissecting aneurysm of the lower thoracic aorta incorrectly diagnosed. The patient was discharged but soon returned with the picture of sepsis. A streptococcus viridans was cultivated from the blood stream. Subacute bacterial endocarditis was assumed. At autopsy a recently sealed perforation of the posterior wall of the stomach was found and an abscess in the lesser omental sac which was the source of the septicemia. The endocardium was free from

change. Naturally, metastatic suppurative lesions also occur.

The sequelae resulting from unrecognized perforated peptic ulcer which are of interest to the diagnostician are attributable to adhesions occasioned by organization of exudate. When the newly formed fibrous tissue involves the distal end of the stomach atypical and bizarre x-ray deformities of the pars pylorica are produced. These lesions are frequently diagnosed malignant and laparotomy undertaken at a most inopportune time and in cases where operation is not indicated. Where the exudate which becomes organized is located caudad to the stomach, for instance, in the cul-de-sac of Douglas, loops of small intestine participate in the adhesive process and intestinal obstruction is the consequence. Unless the diagnosis of ruptured ulcer was made at the time of perforation the etiology of the obstruction will probably remain a mystery.

The question of treatment of perforated peptic ulcer does not fall within the scope of this paper. Nevertheless, a word of caution should be sounded. The fact that spontaneous recovery frequently follows rupture with minimal leakage does not mean that medical treatment is being recommended for perforated ulcer. Operation is never omitted except in the management of *forme fruste* rupture and then only if the patient is seen for the first time late in the course of illness and effective closure of the hole can be established with a reasonable degree of certainty. (See Singer and Vaughan.⁸) The chief object of this communication is to impart to the medical men particularly, a knowledge of perforations which are not of the classical type in order to elucidate a number of clinical pictures which hitherto generally escaped recognition.

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DISCUSSION

Dr. J. Donald Milligan, Elgin: I think Dr. Singer is to be congratulated on the intensive work he has done on this subject. I do not think there is any more important subject we have to deal with, both as internists and surgeons, than the perforated peptic ulcer. The internist is mainly interested from the diagnostic standpoint. The surgeon is, perhaps, more interested from the treatment standpoint.

I would like to emphasize two points Dr. Singer brought out in his paper. First, is the very important point of a detailed, accurate history. The late Dr. B. W. Sippy, in his training of students and assistants, held the history as one of the most important things we can have in all diagnostic work. His main criterion was: make the clinical diagnosis first and then go to the x-ray and laboratory for confirmatory evidence.

If this is done in these acute cases—I am speaking of the acute cases that come to the internist for diagnosis soon after perforation—if this detailed, accurate history is taken I am wondering if we need the pneumoperitoneum x-ray plate in the acute cases.

However, in the chronic or later cases, where we see the patient two or three weeks or a month later, we need all the diagnostic aids we can get to make a diagnosis.

I would like to ask Dr. Singer one question. How long after the perforation has existed can we expect to find this pneumoperitoneum in the x-ray? How many days, weeks or months in these chronic cases can we expect to find this pneumoperitoneum?

The second important point I want to bring out is the recognition of the partial obstruction of the small bowel. This is very frequently overlooked by men who are examining cases, abdominal cases, for diagnosis. To me, although I have had, perhaps, much more limited experience than Dr. Singer, this is one of the most important complications we have following perforation of the peptic ulcer.

The other complications of which he speaks are very important, but to me the partial obstruction that is formed by the inflammation, the adhesive inflammation going down and pulling up, interrupting the peristaltic wave of the bowel down from the stomach, causing distress, is very important.

Unfortunately, there is no diagnostic way that we can find that obstruction unless it is fairly complete. The partial obstruction is not picked up by the x-ray. It is not picked up by the laboratory. It is not picked up by physical examination. You may have a small partial obstruction with a great deal of distress in the abdomen and no findings whatever except your detailed clinical history that helps you to make this diagnosis.

To me, too many times we go into the abdomen to operate, and we fail to follow the small bowel from the duodenum down throughout, especially the bowel that is around the stomach and that area that may become adhesive with the adhesions from the inflammation. I think that is one of the most important complications that we have following the perforation of a peptic ulcer.

Dr. Singer: (Closing Remarks): During the hyperacute period the diagnosis of perforated ulcer is generally simple, particularly if the patient is seen the first hour or two following rupture. If, however, the patient is not observed until a number of hours after perforation it is often difficult to make the diagnosis from physical signs alone. There are so many affections that simulate perforated ulcer in the later stages of the illness that unless a trustworthy history is obtained the true cause of the symptoms may not be discerned. In those cases where a question arises as to the correct diagnosis the demonstration of a pneumoperitoneum, if present, settles all dispute.

The question was asked regarding the rate of absorption of the escaped air following perforation. The gas remains in the abdomen for about five to ten days depending roughly on the amount in the peritoneal cavity. The air is much more slowly absorbed following perforation than after artificial pneumoperitoneum, due presumably to the fact that the exudate on the peritoneal surfaces following rupture, prevents rapid absorption.

I wish to thank Dr. Milligan for his helpful comments and particularly for emphasizing the rôle of unrecognized perforated ulcer in the causation of intestinal obstruction. The obstruction generally results from a pelvic abscess which subsequently becomes absorbed. The escaped gastroduodenal content and the peritoneal exudate gravitate into the pelvis, the infectious material becomes localized and organization follows with resultant adhesions. The clinical manifestations of intestinal obstruction may not appear, however, for months or years after the unrecognized perforation occurred.

I should like to repeat that I am not advocating the medical treatment of perforated peptic ulcer. The object of this talk is to bring to your attention the following facts: Perforated ulcers can and do heal spontaneously; that not all perforations lead inevitably to death; that in the cases which recover spontaneously the perforations are quite small, often minute; that the symptoms are just as characteristic at onset as in the classic rupture; also that when these cases heal spontaneously, several complications and sequelae with indistinct clinical pictures follow; and finally that these complications and sequelae resist elucidation unless the previous unrecognized perforation is discovered through the history.

VALUABLE

Visitor: "Is your son who has just graduated from college a help to you on the farm?"

Farmer: "Yes. If it wasn't fer him the language which I address to the livestock would be turrible on-grammatic."

TREATMENT OF DEMENTIA PARALYTICA: COMPARATIVE STUDY OF COMBINED ARTIFICIAL HYPERPYREXIA AND TRYPAR- SAMIDE VERSUS THERAPEUTIC MA- LARIA: PRELIMINARY REPORT

Clarke H. Barnacle, Franklin G. Ebaugh and Jack R. Ewalt, Denver (*Journal A. M. A.*, Sept. 26, 1936), report on a comparative study of combined artificial fever and tryparsamide versus therapeutic malaria in the treatment of sixty cases of dementia paralytica over a one year period. Chemotherapy followed both methods. During this period in the artificial fever series 70 per cent (twenty-one patients) were definitely benefited while in the malaria group 63.3 per cent (nineteen cases) were likewise helped. The serologic reactions of the cerebrospinal fluid in both groups did not parallel the clinical results.

VASCULAR COLLAPSE IN TOXEMIA OF PREGNANCY

According to Fred L. Adair, Chicago, Arthur B. Hunt, Rochester, Minn., and Rupert E. Arnell, Chicago (*Journal A. M. A.*, Sept. 26, 1936), parturitional vascular collapse is a grave condition occurring typically in a rather small percentage of elderly multiparas who have been afflicted with a progressively severe nephritis in succeeding pregnancies. The incidence of this condition in their clinic was 0.2 per cent of all deliveries and 2.55 per cent of all toxemic patients. The toxemia seems to be the most important etiologic factor, with delivery definitely exciting the appearance of vascular collapse. The blood pressure and general condition of cases of severe and chronic toxemia should be watched closely for twelve hours after delivery. Equipment and personnel should be ready for prompt and effective treatment in the event of the collapse of such a patient. The mortality is high, 15.49 per cent of seventy-one cases reported. The condition is an entity deserving of recognition and further study because of its gravity and because proper treatment should reduce the mortality appreciably. The most common pathologic lesion was a chronic glomerulonephritis. The liver lesions in these cases may merit further study. Proper use of hypertonic intravenous dextrose solution forms the basis for effecting recovery from the shock. A secondary partial anuria, associated with hypotension, may require management.

INJURIES OF HAND: CLINICAL LECTURE AT KANSAS CITY SESSION

Sumner L. Koch, Chicago (*Journal A. M. A.*, Sept. 26, 1936), states that the arrest of hemorrhage, the treatment of shock, and the careful examination of the hand—not the wound—are the first steps in the care of an injured hand. The principles involved in the further treatment, as in the treatment of any compound injury, are care not to add injury to that which has already taken place, careful excision of hopelessly injured tissue, the use of a minimum amount of foreign material in the repair of the injured structures, closure of the open wound as soon as it can be done with safety, and rest until healing has taken place.

TRICHLOROETHYLENE INTOXICATION

According to Herbert Eichert, Baltimore (*Journal A. M. A.*, May 9, 1936), many cases of industrial poisoning with trichloroethylene have been reported, but there is only one recorded instance of a toxic syndrome following the prolonged therapeutic administration of the chemical. Two additional cases are presented. The symptoms observed were due to a disturbance of the central nervous system as manifested by mental confusion, disorientation, inability to concentrate, amnesia, aphasia, dysarthria, ataxia and analgesia without anesthesia of the area innervated by the trigeminal nerve. In view of these observations it seems likely that the original supposition is correct; namely, that the cases of industrial poisoning were due partly to adventitious substances and that all the manifestations noted in the industrial cases of so-called trichloroethylene poisoning were not necessarily effects of trichloroethylene alone. Although proprietary preparations of trichloroethylene are thought to be relatively harmless remedies if used in prescribed amounts, the cases presented here indicate that this therapeutic agent is capable of producing grave states of intoxication if the suggested dosage is exceeded or if the administration of the drug is unduly prolonged.

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Marriages

DAVID WILLIAM FEY to Miss Wilma Buehler, both of Peoria, Ill., June 20.

JOSEPH HOWARD SIEGFRIED to Miss Mary Elizabeth Easton, both of Peoria, Ill., August 7.

Personals

Dr. Henry Schmitz, Chicago, addressed the Kankakee County Medical Society in Kankakee, September 10, on carcinoma of the cervix.

Dr. Margarete M. H. Kunde, Chicago, addressed the Iroquois County Medical Society in Watseka, September 24, on endocrine therapy.

Dr. Lee O. Frech, Decatur, addressed the Randolph County Medical Society, August 27, on medical economics.

Dr. Ford K. Hick, Chicago, will address the Bureau County Medical Society, September 8, on pneumonia.

At a meeting of the Lee County Medical Society, September 7, Dr. Howard L. Beye, Iowa City, spoke on management of acute conditions in the abdomen.

Dr. Charles H. P. G. Benning, district health officer of Royal Oak, Mich., has been named school health director of Peoria.

Dr. Hal E. Freeman, Willard, Mo., has been appointed a member of the student health service, University of Illinois, Urbana.

Dr. Rosco G. Leland, Chicago, addressed the Sangamon County Medical Society in Springfield, September 3, on "The Economics and Ethics of Medicine."

Dr. Raymond W. McNealy, Chicago, discussed cancer of the breast before the Peoria City Medical Society, September 15.

Dr. Franklin E. Walton, St. Louis, spoke before the Vermilion County Medical Society, September 1, on "Diagnosis and Management of Biliary Tract Diseases."

Dr. Philip McGinnis has been appointed health officer of Joliet township, succeeding Dr. Londus Brannon, who resigned after three years' service.

Dr. William B. Serbin, Chicago, addressed the Coles-Cumberland County Medical Society, September 10, on "Toxemias of Pregnancy."

Dr. Lowell D. Snort, Chicago, presented a paper before the Union County Medical Society, September 10, on "Diagnosis, Pathology and Advancements in the Treatment of Duodenal and Gastric Ulcers."

At a meeting of the Adams County Medical Society in Quincy, September 14, Drs. Richard S. Weiss and Duff S. Allen, St. Louis, discussed drug eruptions and recent developments in surgery of the thyroid, respectively.

Drs. William B. Serbin and Laurence E. Hines, Chicago, addressed the McHenry County Medical Society, August 26, on "Pathology and Treatment of Procidencia of the Uterus" and "Present Knowledge of Endocardial Infections", respectively.

Dr. Maximilian J. Hubeny has been appointed chief of the x-ray department of Cook County Hospital, succeeding Dr. Chester H. Warfield, who has held the position for eight years.

The McLean County Medical Society was addressed, September 10, by Drs. Gladys R. H. Dick, Evanston, on scarlet fever; Rosco G. Leland, director, Bureau of Medical Economics,

American Medical Association, economics and the ethics of medicine, and William H. Holmes, Chicago, clinical aspects of nephritis.

At a meeting of the St. Clair County Medical Society in Belleville, September 2, Dr. Vincil Rogers Deakin, St. Louis, spoke on "Pyelitis of Pregnancy." Dr. Frank G. Norbury, Jacksonville, addressed the East St. Louis meeting, September 3, on "Neuropsychiatry in General Practice."

Dr. Clarence J. McMullin addressed the DuPage County Medical Society, September 16, 1936, on "Complications of Diabetes Mellitus."

News Notes

—Dr. William F. Braasch, Rochester, Minnesota, will deliver the Eighth Annual William T. Belfield Lecture on Thursday, October 29, 1936, at the Palmer House. His subject will be "Unilateral Chronic Pyelonephritis." Preceding the lecture at 6:30 P. M. there will be a dinner in honor of Dr. Braasch to which members and non-members of the Society are invited (per plate \$1.50).

—On June 15, 1936, the physicians employed by the Department of Public Welfare, State of Illinois, organized and formed the Physicians' Association, Dept. of Public Welfare, State of Illinois. At the subsequent general meeting held at Peoria, on Sept. 16, Dr. J. J. Madden of Kankakee, Illinois, was elected president and Dr. J. Marcovitch of Jacksonville, Illinois, was elected secretary-treasurer.

The main objective of the association is the betterment of the medical service in the various state institutions.

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—The state department of public welfare has announced a plan to promote better hygienic care for prospective mothers and infants. Ef-

forts will at first be concentrated in ten counties of the state showing the highest maternal and infant mortality rates and for which statistical material has been assembled for eight years: Richland, Pulaski, Alexander, Coles, Crawford, Montgomery, Morgan, Saline, Boone and Effingham.

—The Seventh Annual Charles Sumner Bacon Lectures will be given at the College of Medicine, University of Illinois, 1853 West Polk Street, in Room 423, by Dr. Frank W. Lynch, Professor and Head of the Department of Obstetrics and Gynecology, College of Medicine, University of California. The first lecture will be given Friday, October 16, at 5 p. m. on the subject of "Carcinoma of the Uterus." The second lecture will be given on Friday, October 23, 5 p. m. on the subject of "Uterine Fibroids."

You are cordially invited to attend.

—Physicians of western Illinois will be guests of the McDonough County Medical Society at a clinical conference in Macomb, September 24. Dr. Robert S. Berghoff, Chicago, will conduct a heart clinic in the afternoon, and ten patients will be presented by local physicians for examination and demonstration. In addition, Dr. Berghoff will speak on common diseases of the heart; Dr. Joseph E. F. Laibe, Chicago, on hematuria, and Dr. William J. Pickett, Chicago, thyroid surgery.

—The Rockefeller Foundation has granted to the University of Illinois College of Medicine a fund of \$15,000 a year for three years to promote undergraduate instruction in psychiatry. The work is under the immediate supervision of Dr. Harold Douglas Singer, professor and head of the department of psychiatry, and was begun September 1. In general, the program involves the extension of psychiatric teaching into other departments of medicine, particularly that of internal medicine.

—Totals of 150,462 cases of syphilis and 176,094 of gonorrhea were reported in Illinois during the ten years ended with 1935, according to the state department of health. During the same period, 1,232,746 births were recorded, indicating that about one in every eight or nine children is destined to be infected with syphilis at some time during life unless the sources of infection are cleared up. In 1935 a total of 15,628 cases was reported against 12,577 in 1926, with 12,988 and 19,813 as minimum and maxi-

mum figures for intermediate years, the department stated.

—The state health department reports that diabetes is now a hazard twice as great as that of tuberculosis for the population in one half of the cities and in one-third of the counties of Illinois. Deaths from diabetes have more than tripled during the last twenty-five years, the report stated, while those from tuberculosis have been cut in half. Last year, diabetes caused nearly twice as many deaths as did tuberculosis in twenty-five principal cities and thirty-four counties of the state. There were 1,978 deaths attributed to diabetes in Illinois last year against 600 in 1910 and 342 in 1902, the health department reported.

—The cancer research committee of the Chicago Woman's Club announces its annual lectures on cancer, with the following speakers:

Dr. Max Cutler, October 22, Cause and Cure of Cancer.

Dr. Harold E. Robertson, October 29, Rochester, Minn., Scientific Aspects of Cancer.

Dr. Frank L. Rector, Evanston, November 5, Cancer, A Public Health Problem.

Miss Edna Foley, superintendent, Visiting Nurse Association, Nursing Care of Cancer Patients in Chicago.

Dr. William W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association, November 12, Importance of Popular Education on Cancer and Approved Methods of Carrying on Such Education.

—A three story addition to the Surgical Institute for Children, University of Illinois College of Medicine, is now under construction. The basement will contain an all tile hydrotherapy pool. On the first floor there will be a solarium, which will accommodate twenty patients at one time for ultraviolet treatments, and a gymnasium and apparatus room completely equipped for corrective exercises. Occupational therapy, recreation, case and general duty rooms will occupy the second floor, while the third will be given over to a complete laboratory, including fume and dark rooms, and two large school rooms with adjustable desks for the children. The present building is undergoing minor alterations on various floors which will increase its capacity about sixty beds, making a total of 144 beds to be occupied by indigent crippled children from all parts of the state.

Deaths

JOSEPH BARNES BACON, Macomb, Ill.; Texas Medical College and Hospital Galveston, 1879; Chicago Medical College, 1881; member of the Illinois State Medical Society; fellow of the American College of Surgeons; at one time instructor in surgery at the Northwestern University Medical School, Chicago; for many years surgeon for the Burlington Railway; formerly on the staff of St. Francis Hospital; aged 82; died, July 21, of carcinoma of the rectum.

LESLIE ALVEY BEARD, Polo, Ill.; Chicago Medical College, 1889; aged 76; died, June 26, of heart disease.

GEORGE WASHINGTON BAMBERGER, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; aged 56; died, July 9, in the Michael Reese Hospital, of carcinoma of the stomach.

EMANUEL BERNARD FINK, Chicago; Rush Medical College, Chicago, 1920; a Fellow, A. M. A.; professor of pathology and bacteriology at the Chicago College of Dental Surgery; on the staff of the Cook County Hospital; aged 46; hanged himself, June 16.

NATHANIEL FRUTKOW, Chicago; University of Kansas School of Medicine, Kansas City, Kan., 1914; a Fellow, A. M. A.; aged 46; member of the staff of the Henrotin Hospital, where he died, July 20, of streptococcic meningitis.

CHARLES NEWTON GARTIN, Chicago; Bennett Medical College, Chicago, 1912; a Fellow, A. M. A.; aged 46; was drowned while swimming in Lake Michigan at Gary, Ind., June 14.

JACOB FRANCIS HAHN, Donnellson, Ill.; University of Illinois College of Medicine, Chicago, 1936; aged 31; died, June 13.

JACOB LA PORTE, Chicago; Illinois Medical College, Chicago, 1907; a Fellow, A. M. A.; aged 55; died, August 22, in the Edgewater Hospital, of cerebral hemorrhage and hypertension.

ALOYSIUS JAMES LARKIN, Chicago; Rush Medical College, Chicago, 1916; a Fellow, A. M. A.; associate in radiology at Northwestern University Medical School; aged 47; author of a book called "Radium in General Practice"; at various times on the staffs of St. Francis Hospital, Evanston, Ill., University, Cook County, Evangelical, Edgewater and Wesley Memorial hospitals, where he died, August 20, of coronary occlusion.

MAYER HARRIS LEBENSOHN, Chicago; Hahnemann Medical College and Hospital, Chicago, 1895; a Fellow, A. M. A.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; formerly vice president and counselor of the Chicago Ophthalmological Society; instructor in ophthalmology at the University of Illinois College of Medicine, Chicago, from 1907 to 1914; for many years attending ophthalmologist to the Illinois Charitable Eye and Ear Infirmary, Mount Sinai Hospital, Orthodox

Jewish Home for the Aged, and the Marks Nathan Jewish Orphan Home; aged 71; died, June 26, at the Mayo Clinic, Rochester, Minn., of embolism following a minor surgical operation.

SHERMAN T. LEWIS, Menard, Ill.; Northwestern University Medical School, Chicago, 1892; aged 69; died, June 20, of cerebral arteriosclerosis.

WILLIAM ALBERT O'CONNOR, Chicago; University of Illinois College of Medicine, Chicago, 1914; served during the World War; aged 50; died, June 25, in the Wesley Memorial Hospital, of hypertensive heart disease.

FRANCIS JOSEPH PFEFFER, Quincy, Ill.; Washington University School of Medicine, St. Louis, 1895; served during the World War; aged 63; died, June 16, in the Veterans Administration Facility, Jefferson Barracks, Mo., of myocarditis and coronary thrombosis.

VAN LEAR POLK, Chicago; Meharry Medical College, Nashville, Tenn., 1919; aged 43; died, June 26, in Proviso Township, of carcinoma of the tongue.

ANTON RADESINSKY, Chicago; Medizinische Fakultät der Universität Wien, Austria, 1894; aged 69; died, June 18, of cerebral thrombosis.

HERMAN REINSCH, Chicago; Chicago College of Medicine and Surgery, 1912; a Fellow, A. M. A.; fellow of the American College of Surgeons; served during the World War; aged 48; member of the staff of St. Francis Hospital, Evanston, where he died, June 14, of coronary thrombosis, while visiting patients.

WILLIAM LORENZO SHANK, Lee, Ill.; Central College of Physicians and Surgeons, Indianapolis, 1894; aged 69; died, June 1, in the East Side Hospital, Waterman, of coronary thrombosis.

HARRY ALBERT SINGER, Chicago; Rush Medical College, Chicago, 1922; a Fellow, A. M. A.; associate professor of medicine, University of Illinois College of Medicine; member of the Central Society for Clinical Research; on the staffs of the Cook County Hospital, University Hospital and the Research and Educational Hospital, University of Illinois; aged 40; died, August 21, of hypertension and acute pericarditis.

ORA F. THOMAS, Chillicothe, Ill.; Chicago Medical College, 1878; aged 81, died, May 27, of cholelithiasis and chronic pancreatitis.

GEORGE ABRAHAM TORRISON, Chicago; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; member of the Illinois State Medical Society; associate clinical professor of laryngology and otology, Rush Medical College; fellow of the American College of Surgeons; aged 71; attending laryngologist to the Lutheran Deaconess Home and Hospital and Lutheran Memorial Hospital; assistant attending laryngologist to the Presbyterian Hospital, where he died, June 20, of pulmonary tuberculosis.

PAUL W. WADSWORTH, Milan, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1883; formerly mayor of Milan; aged 76; died, May 27, of carcinoma of the face.



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According to W. B. Hoover and J. L. Poppen, Boston (Journal A. M. A., Sept. 26, 1936), trigeminal neuralgia and glossopharyngeal neuralgia are alike in all respects except the location of the agonizing flashes of pain and the localization of the trigger areas which set off these paroxysms. The "trigger" areas in glossopharyngeal neuralgia include the pharyngeal wall, the tonsillar region, the base of the tongue and rarely the ear, while trigger areas of trigeminal neuralgia occur in the buccal mucous membrane and about the lips, nose and various areas on the face. When the first or second divisions of the trigeminal nerve are affected there should be little or no difficulty in the differentiation of these two neuralgias, but when the third division of the trigeminal is involved a little more care must be exercised to differentiate it from the ninth nerve. Cocainization of the mucous membranes over the distribution of the ninth nerve will, as a rule, temporarily control the paroxysmal pain from this nerve. Medical and surgical treatment are available in the treatment of glossopharyngeal neuralgia. In the authors' experience trichlorethylene has been the only drug that has really been efficient in giving a marked amount of relief from this condition. It is administered by the patient's inhaling from 15 to 30 drops from three to four times a day. The surgical treatment of choice is the intracranial section of the ninth nerve in the posterior fossa.

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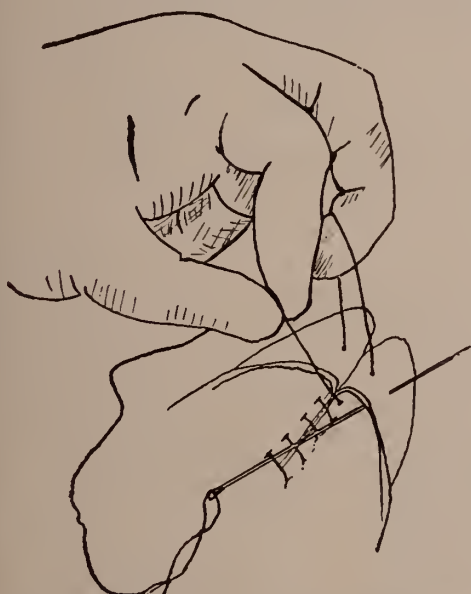
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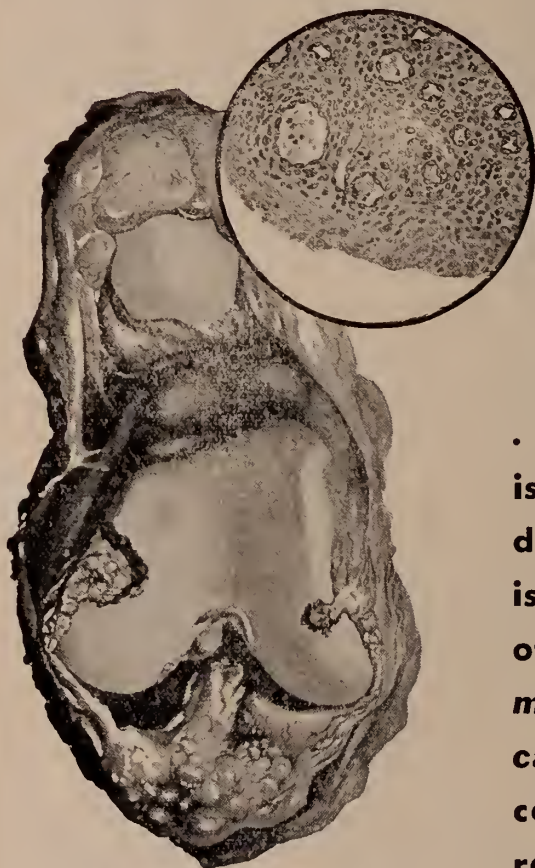
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Book Reviews

ELEMENTS OF ELECTROCARDIOGRAPHIC INTERPRETATION.

By Louis N. Katz and Victor Johnson. The University of Chicago Press. 1936. Price \$1.00.

Five of the 38 plates and descriptions have been revised since the original edition. The new edition includes four lead electrocardiograms which have become very useful in the diagnosis of coronary occlusion.

Much of the original work along these lines has been carried out by Dr. Katz at the Michael Reese Hospital in Chicago.

In presenting a specialized subject in elementary terms, the booklet serves two purposes: to provide a brief, graphically illustrated manual, using the "ward walk" principle of instruction, that is readily understood by medical students in physiology and internal medicine; and to provide general practitioners, who own electrocardiograph machines, the most essential material on this subject for their needs.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine surgery and all the various specialties pertaining to medicine by leading members of the medical profession throughout the world. Edited by Louis Hamman, M.D. Volume III. Forty-six series. 1936. Philadelphia, Montreal, London. J. B. Lippincott.

BULLETIN OF THE NEUROLOGICAL INSTITUTE OF NEW YORK. Volume V. Elsberg Anniversary Number. August 1936. Baltimore, Md., Waverly Press, Inc.

RECOLLECTIONS OF RICHARD DEWEY, PIONEER IN AMERICAN PSYCHIATRY. An unfinished autobiography with an introduction by Clarence B. Farrar, M.D. The University of Chicago Press. 1936. Price \$2.00.

Dr. Richard Dewey was one of the group of men who first planned institutional psychiatric work, and his memoirs constitute a valuable record of progress in this field.

These memoirs, written by Richard Dewey at the age of eighty-five and left incomplete by his death, have been edited by his daughter.

Many Illinois and Wisconsin homes hold this man in affectionate memory because he returned to their families mentally cured men and women who had been his patients in the Kankakee institution and the Milwaukee sanitarium, of which he was the head.

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(Continued on page 34)

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some of the things which he effectuated, such as the "cottage plan" of housing insane patients, the entire abolishment of physical restraints such as strait-jackets, chains and the like; training schools for attendants had been considered, occupational therapy and hydrotherapy were not unknown when Dr. Dewey became head of Kankakee. But he was the first executive of a large, public hospital for insane to place these and many other improvements in effect as essentials of the administration of a large institution.

An interesting chapter relates his experiences as an American volunteer assistant surgeon in the Franco-Prussian war, 1870-71. Few outside his family and personal friends knew that he had been a war doctor. The recollections of his early years—he was born Dec. 6, 1845, at Forestville, N. Y., the son of the village blacksmith—recall men, events and places that played prominent roles in the development of this country.

FACTS AND PHAGOCYTES. The story of the Development of Hydrochloric Acid Therapy. By Burr Ferguson, M.D. Youngstown, Ohio. Medical Success Press. 1936. Price \$5.00.

DISEASES OF THE AIR AND FOOD PASSAGES OF FOREIGN-BODY ORIGIN: By Chevalier Jackson, M.D., ScD., F.A.C.S., LL.D., Professor of Bronchoscopy and Esophagoscopy, Temple University and Chevalier L. Jackson, A.B., M.D., M.Sc. (Mee.), F.A.C.S., Professor of Clinical Bronchoscopy and Esophagoscopy, Temple University. 994 pages with 2000 illustrations including 3 plates in colors. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$12.50 net.

This work is presented because of the urge of so many of the medical profession for the author to present in concrete form the enormous mass of clinical material that has accumulated as the result of unique opportunities for observation of diseases of the ear and food passages that have resulted from foreign bodies.

A MANUAL OF PHARMACOLOGY: By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland, Ohio. Fifth Edition, Entirely Reset. 1190 pages with 22 illustrations. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$7.50 net.

The object of this Manual is to furnish medical students—including interested practitioners—an outline of the current conception of the action of drugs, especially from the point of view of their practical importance in medicine, in other words it is designed to serve as a reference book as well as text.

A TEXT-BOOK OF PHYSIOLOGY, for Medical Students and Physicians: By William H. Howell, Ph.D., M.D., Sc.D., LL.D., Emeritus Professor of Physiology in The Johns Hopkins University, Baltimore. Thirteenth Edition, Thoroughly Revised. 1150 pages with 308 illustrations. Philadelphia and London: W. B. Saunders Company, 1936. Cloth, \$7.00 net.

Animal physiology like other branches of science is constantly growing and changing. Every part of physiology is liable to revision and extension in consequence of the great annual output of investigations and observation. To meet these changing conditions text books on physiology must be revised at frequent intervals to keep abreast with the times. In this thirteenth edition the subject of physiology has been revised and brought thoroughly up-to-date.

SURGICAL CLINICS OF NORTH AMERICA: Issued serially, one number every other month. Volume 16, Number 3. New York Number—June 1936. 277 pages with 79 illustrations. Per Clinic year February 1936 to December 1936. Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1936.

The contributors to this number are Doctors Auger, Binkley, Burdick, Campbell, Cave, Deaver, Dudley, Farnum, Garlock, Heyd, Krida, Meleney, Parsons, Pennoyer, Potter, Smith, Solley, Stookey, Weeks, and Wilson.

FUNDAMENTALS OF HUMAN PHYSIOLOGY. By J. J. R. MacLeod, M.D. and R. J. Seymour, M.D. Fourth Edition. St. Louis. The C. V. Mosby Company. 1936. Price \$2.50.

In this edition the major changes that have been made are concerned with the discussion of the vitamins and the endocrine glands. The discussion on metabolism has been condensed to approximately one half of the space devoted to the topic in previous editions. The chapter dealing with immunity has been simplified and approximately thirty figures and diagrams have been added.

PRINCIPLES OF CHEMISTRY. By Joseph H. Roe, Ph.D. Fourth Edition. St. Louis. The C. V. Mosby Company. 1936. Price \$2.75.

This text book is intended to meet the needs for instruction in chemistry of nursing devoting forty-five to sixty hours to the subject.

The fourth edition of this book became necessary because of the marked advances in chemistry that have been made in the last four years.

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Since Goldberger's pronouncement, considerable research has been devoted to resolution of the vitamin B complex and, what is equally important, to testing the specificity of vitamin G in the cure of human pellagra (2).

The findings in the laboratory and clinic have not, in some respects, been entirely in accord (3).

As reports of further investigations appeared in the literature, it became clear that the vitamin B complex had been aptly named. At one time claims were made for the existence of as many as eight factors in this complex (4).

While later work has reduced this number, we know today that what has been consid-

ered in the past as vitamin G is, in reality, a combination of several factors. A relation between experimental cataract and vitamin G has been described and, recently, another associated factor was postulated (5).

The significance of these individual factors in human nutrition has not as yet been established. However, regardless of this fact, students of nutrition are agreed that we must provide for the inclusion of so-called vitamin G—admittedly a complex—in the daily dietary. It is also obvious that until more is known about the individual components of the complex, we must continue to depend upon present day bioassay methods to determine the "vitamin G" potencies of foods.

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(1) 1926. U. S. Pub. Health Report, 41, 297.
(2) 1934. Am. J. Med. Sci., 187, 512.
(3) 1935. J. Am. Med. Assoc., 104, 1377.

(3) 1932. J. Am. Med. Assoc., 99, 120.

(4) 1933. J. Nutrition, 6, 559.

(5) 1934. J. Nutrition, 7, 97.

1936. Science, 83, 17.

(6) 1932. J. Nutrition, 5, 307.

1932. Ind. Eng. Chem., 24, 457.

(7) 1932. J. Am. Med. Assoc., 99, 95.

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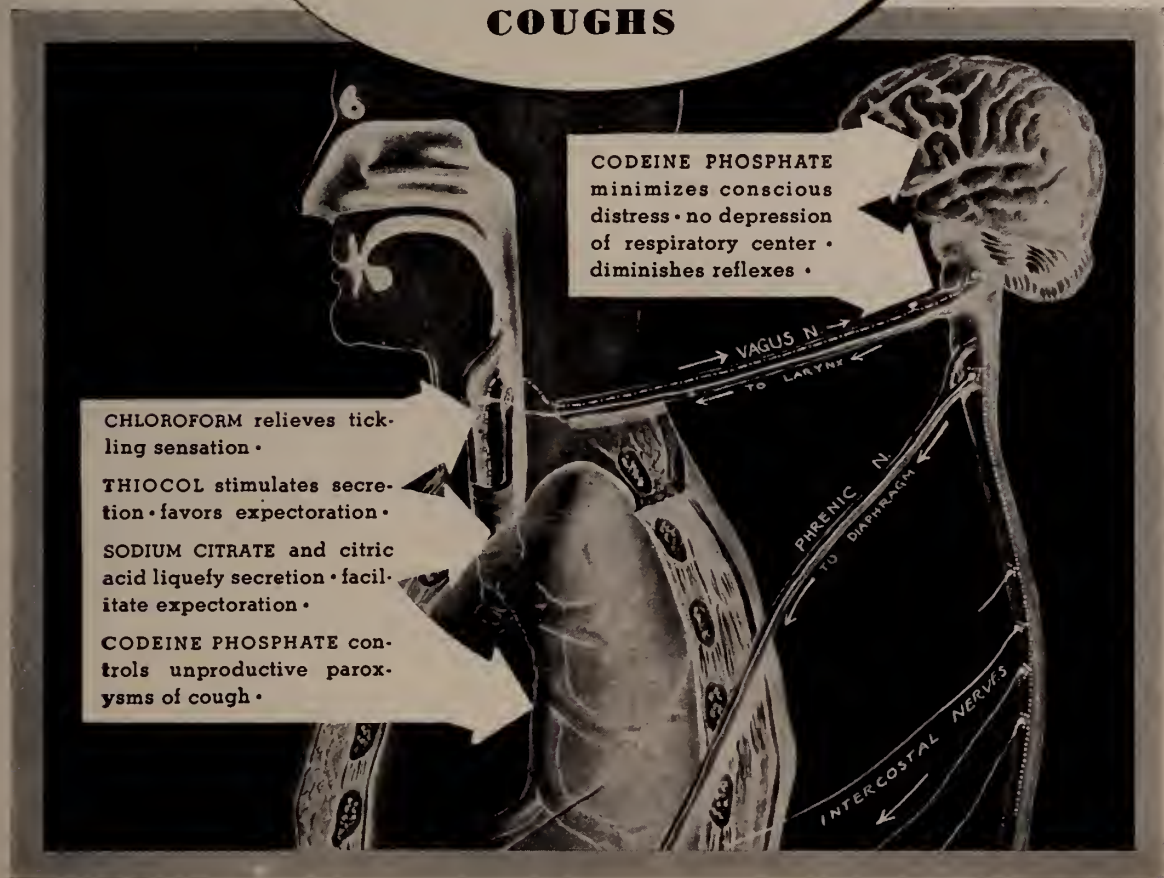
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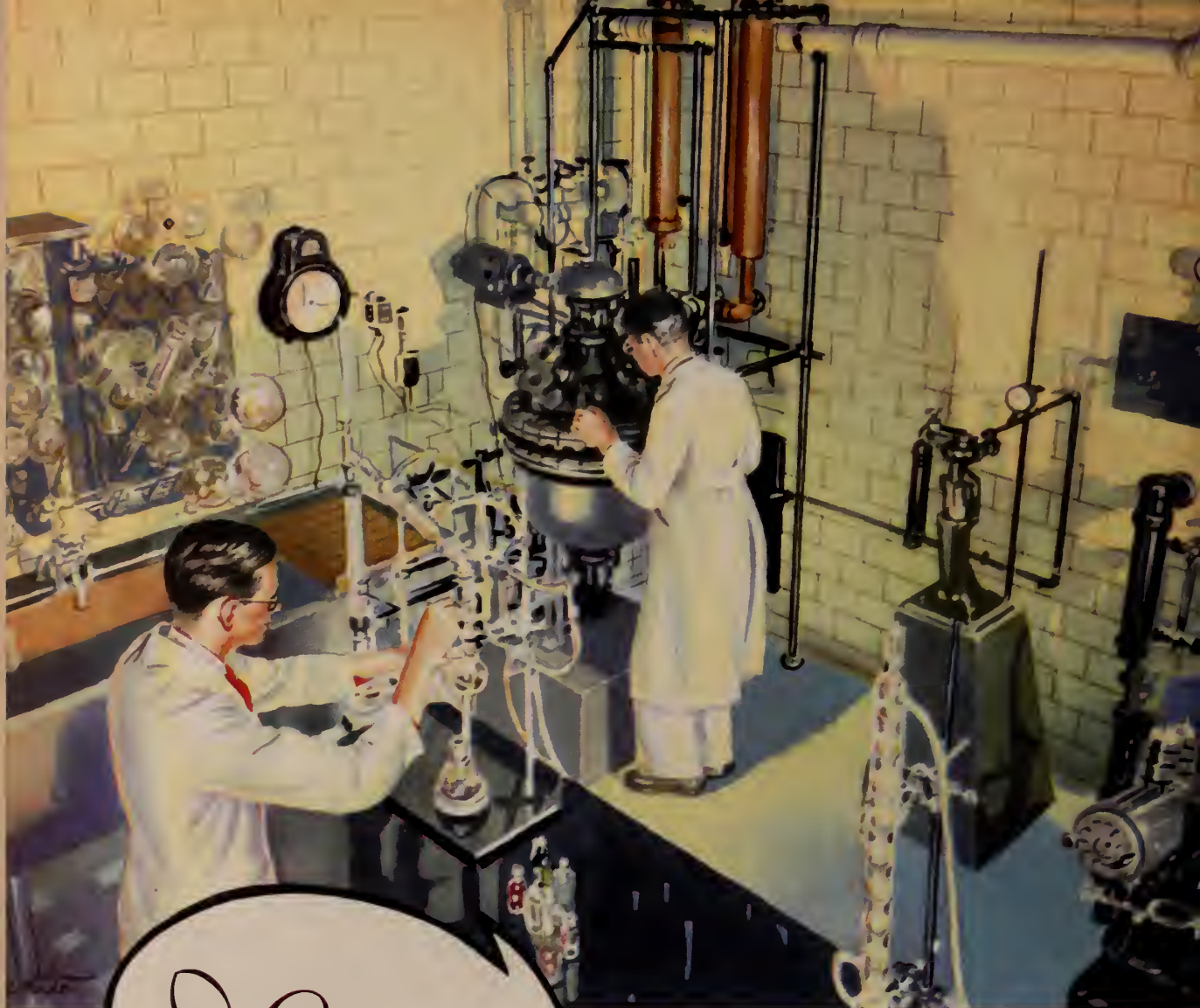
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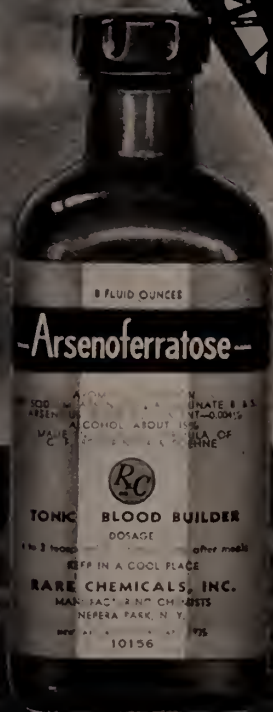
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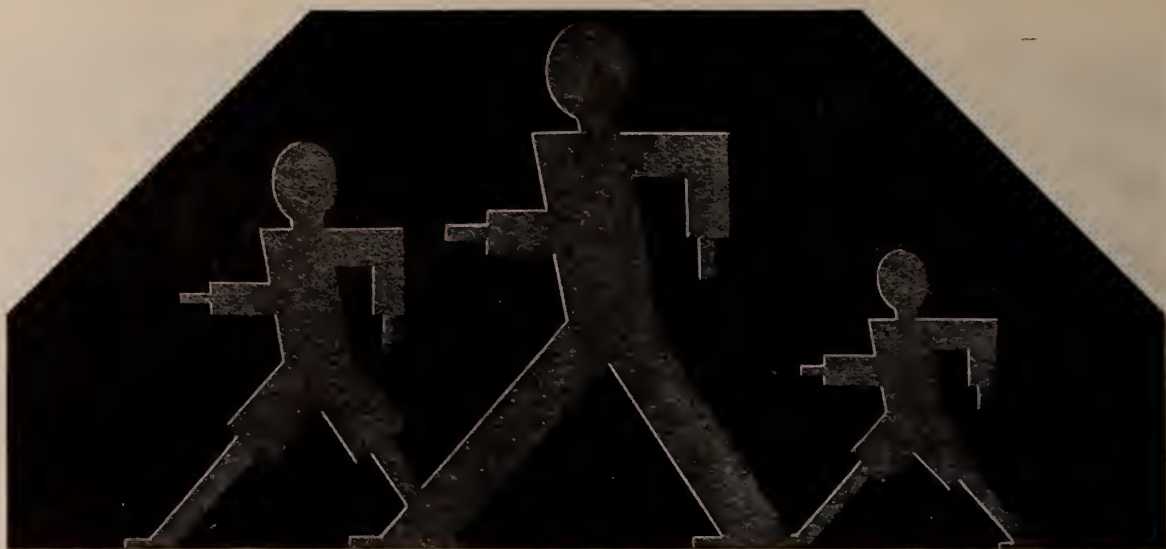
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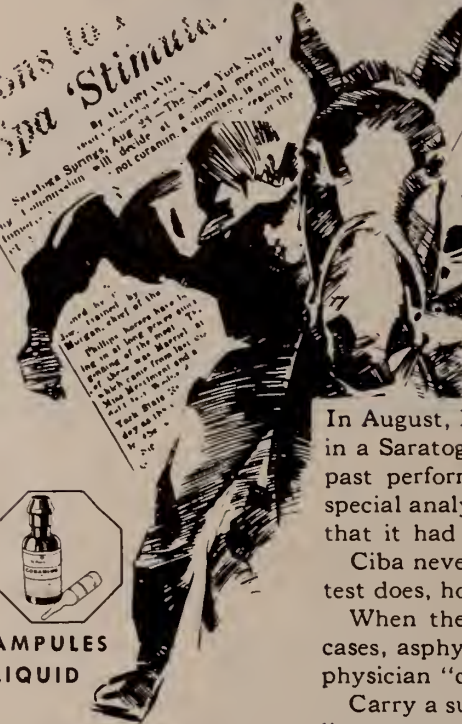


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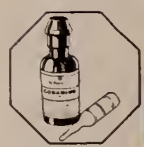
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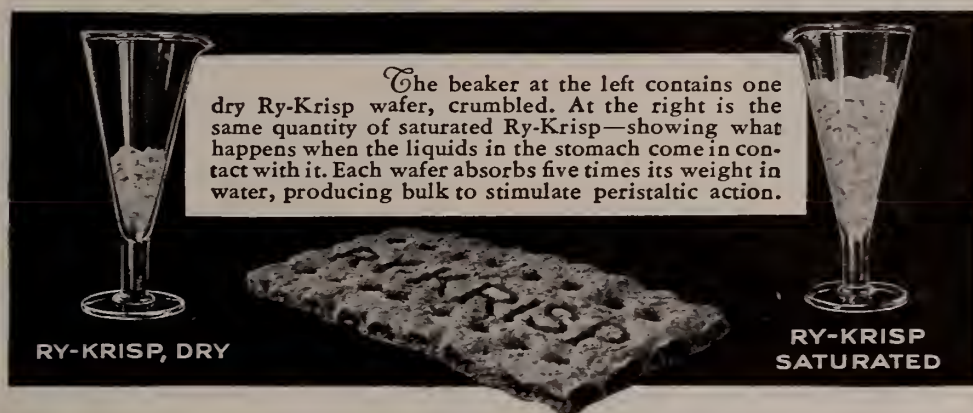
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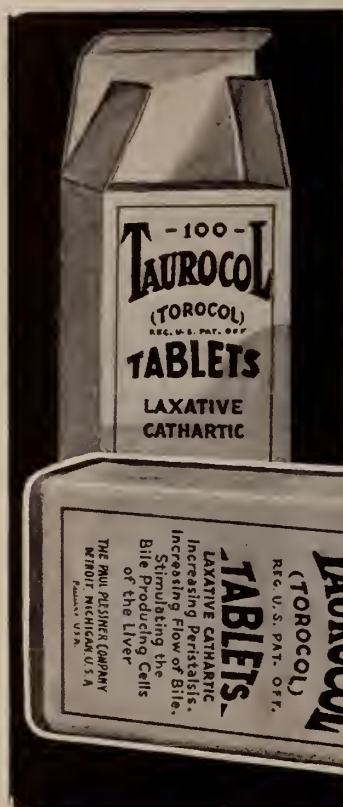
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Editorials

STATE MEDICINE AND SLAVERY— BRITAIN'S MODERN BURDEN

A brilliantly compiled factual review of what has happened to medical patients and medical practice in Great Britain under the present system of state medicine was published on October 11 in *The Chicago Sunday Tribune*, under the signature of John S. Steele a London correspondent for that Newspaper. The article bore this heading

“STATE MEDICINE AND SLAVERY — BRITAIN’S
MODERN BURDEN”

PHYSICIANS OVERWORKED AND NATIONAL
HEALTH DECLINE PANEL SYSTEM GIVES
RISE TO ABUSES”

Now, Mr. Steele is not a scientific expert. He is a layman with an inquiring mind, an appraising eye and that keen newspaper training coupled with experience that enables him to analyze a situation, to sift the wheat from the chaff, and to summarize logically and accurately all its elements as well as to point out the natural conclusions. He gives the United States a truthful report, straight from the heart, of state medicine and its functioning.

Lloyd-George, chiefly responsible for foisting state medicine upon the British nation, got his idea from the system “made in Germany” by Bismarck, the “blood-and-iron” chancellor. Elsewhere we have commented upon the results of State medicine to Germany. By permission of *The Chicago Tribune*.

“Twenty-five years ago Lloyd George, then chancellor of the exchequer under Asquith’s premiership, and not yet ‘the man who won the war,’ startled Great Britain and frightened its possessing classes by his great campaign for ‘social reform.’ He was regarded as a dangerous demagog, and there is no doubt at all that the series of measures which he introduced in 1911 and succeeding years started Britain on the road to socialism, on which it has traveled so far since then.

“Chief among these measures was health in-

surance, which the chancellor introduced to the people in a raging, tearing campaign in which he promised the British workingmen 'ninepence for fourpence.' The British workingman took the bait and the system was inaugurated which for good or ill has been part of British policy since then and probably will continue to be in one form or another.

"The system of state medicine inaugurated then with such a flourish and with so much enthusiasm today *has few defenders even among its so-called beneficiaries*. It has—and this is not only my own opinion but the publicly stated opinion on many occasions of doctors, coroners, hospital officials, and others who are engaged in working the system—reduced the practice of medicine from a profession to a trade, made slaves of doctors and chemists, and has bred in the people a dangerous reliance on hurried and inefficient doctoring which has caused a serious decline in the national health average.

"But before going into the weaknesses of the system it is necessary to explain what it is. Under the original health insurance act, which has been amended and modified several times in detail but not changed in essentials, every employed person in Britain earning less than a certain amount yearly is compelled to become insured against sickness. He or she is supplied with a health insurance book in which a stamp must be stuck every week. The employer is responsible for sticking in the stamps, which are obtained at the postoffice and which cost 9 pence weekly in the case of men and 8½ pence in the case of women, or about 18 and 17 cents. The employer is then entitled to deduct from the current week's wages 4½ pence, or 9 cents, in the case of men and 4 pence in the case of women. In practice this deduction is seldom made in the case of domestic servants or others where there are only one or two employes, but in large establishments, of course, it is a substantial item and the deductions are made automatically.

"The stamp feature gave rise to many amusing incidents in the early days of insurance. Dowager duchesses and other 'old ladies' of both sexes and similar opinions wrote to the newspapers swearing they would never 'lick stamps for Lloyd George,' and some of them actually risked fine and imprisonment for refusing. There was even a movement to organize a non-stamp-lickers' league, but it never got beyond the

newspaper correspondence stage. The 'ninepence for fourpence' slogan, of course, referred to the fact that the working man or woman paid only 4 pence and got 9 pence in benefit, the other 5 pence, or 10 cents, being paid by the employer. The state also makes a small contribution to augment the insurance fund.

And then again

"The benefits to which the insured persons are entitled are free medical attention when ill, either at home or at the doctor's office, or surgery, as it is called in Britain; maternity benefit, free drugs, and various minor benefits.

"Medical treatment is provided by what is known as a panel of doctors and chemists, hence the name 'panel system' by which the arrangement is known. Any qualified doctor is entitled to have his name on the panel in his district, and every insured person is entitled to choose his panel doctor.

"If, as is usually the case, the insured person has no choice, he is assigned by the administrative authorities to a doctor, care being taken to divide the available patients as fairly as possible among the doctors. Chemists, or druggists, are chosen in the same way, and the panel doctor is not allowed to dispense drugs, as he was in the habit of doing before the panel system. If the patient is dissatisfied he can change his panel doctor for another by giving a month's notice."

The doctor if disliked has comparatively small chance to defend himself. Note further that

"There is elaborate machinery for inspection, investigation of complaints against doctors, and an intricate administration system which is said to be far too costly for the service it renders. Doctors, in fact, complain that most of the evils with which the inspectors are constantly dealing are inherent in the system itself and would disappear if greater freedom were given to the doctors. For this service the doctor receives a capitation grant per patient of 9 shillings—roughly about \$2.25—a year. About 5 cents of this is deducted for administrative costs, but \$2.25 per patient a year is near enough the doctor's remuneration. The chemist, or druggist, as he would be called in America, receives about 3 shillings, or 75 cents, per patient a year, for which he must supply all ordinary drugs prescribed by the doctor. A special allowance is made for specially expensive drugs."

In further detail Mr. Steele writes:

"This brings us now to the working of the system and its weaknesses. *A sum of \$2.25 a year for unlimited medical service seems farcical, and it would be if every patient called on the doctor for his services.* It must be remembered, however, that this is insurance and that the doctor's panel includes healthy as well as sick. In actual practice he never sees the majority of members of his panel, but he gets his 9 shillings a year for sick and well just the same. It is also fair to say that the same doctor before the insurance scheme never would have seen many of the poorer of his panel patients at all. When they were overtaken by illness these people either went to the out-patient departments of the charitable hospitals, to the poor law infirmaries, or to the sixpenny doctor, who then flourished in the slums and who was generally either a philanthropist or a quack and who if he were dependent on his practice for his living could not give even the attention which panel patients now receive from their overworked insurance doctors."

Especial attention should be paid to this paragraph, in view of the fact that it comes from a layman—that it is a *patient's* point of view.

"Overwork for the doctors is the great evil of the system and is what has reduced medicine from a profession to a trade. In spite of the fact that practically every general practitioner in Britain outside the wealthy areas in some of the large cities belongs to the panel, there are not enough doctors to go around."

"Excluding men and women in the army, navy, and air force medical services, but including all specialists, all those holding permanent hospital, insurance, or other appointments, and those who have retired but still keep their names on the register, there are just over 40,000 doctors registered in Britain.

"Fifteen thousand of these are 'on the panel,' which means that 15,000 doctors in general practice do not neglect to have their names registered under the insurance act and do not scorn to collect the 9 shillings per head per year."

Mr. Steele proceeding further with his indictment comments that

"There are 15,000,100 insured persons, so that the average panel is about 1,000 patients per doctor. This means an average income for

the doctors of about \$2,250, which is not so bad a starter for a young doctor in a busy neighborhood, particularly when it is remembered that this has nothing to do with his regular practice at regular fees among those whose incomes are above the insurance level.

"Remember also that this is an average. There are hundreds of country doctors with only a handful or a few dozen panel patients, and this, of course, raises the average in the towns. The town average is estimated at between 2,500 and 3,000 patients, and there have been cases mentioned in the coroners' courts and elsewhere of doctors with panels of between 4,000 and 5,000 patients.

"It is officially estimated that a doctor with a panel of 2,000 patients must have about 8,000 attendances at his surgery and must make 1,000 home visits every year. This works out at twenty-two surgery visits a day and between three and four home visits. Again this is an average for healthy and unhealthy neighborhoods. In many towns the number of attendances will be twice as many per thousand as in others, and there are panel doctors who see as many as forty or fifty patients a day at the surgery and call on a couple of dozen at their homes. Of course, the answer is that it can't be done, or rather that 'seeing' means just what it says and cannot include proper examination and diagnosis.

"It is usual for the British doctor to have from one to two regular surgery hours every evening, generally between 7 and 9 p. m. He usually also is to be found at home for an hour in the morning, but as a rule sees only more or less urgent cases or patients by appointment then. The rest of the day is devoted to visiting, hospital work, etc. How, then, can a man, even in the full two hours, attend properly to even twenty patients, or, still worse, forty? Twenty to the hour means three minutes each, and some obviously must have more time than others. Add to that the fact that the British workingman dearly loves a 'bottle' and doesn't think the doctor has done his duty unless he gets one."

And so as Mr. Steele remarks—

"This necessitates spending a minute or two in writing a prescription, and even the most commercial doctor must give a bit of advice as well as a bit of paper. The result, of course, is

that panel practice has degenerated into a quick look for the more obvious symptoms. If a patient is obviously seriously ill he is usually recommended to go to a hospital and given a note to secure admission. This, of course, is the best thing for him, but for every case of acute illness detected thus many are missed in their early stages when preventive measures might have saved the patient much suffering and the state some money.

"Almost daily the system is attacked by coroners and by eminent medical authorities. A coroner in Britain, it must be remembered, is not an unqualified politician. He must be either a doctor or a lawyer, and he has a full-time, well paid job. One of the most constant critics is Dr. Edwin Smith, one of the senior coroners for London and an eminent medico-legal authority.

"In a recent case in Hoxton, a poor district of London, a man who had been visited at his home by his panel doctor and told to come around to the surgery next day, according to Dr. Smith, was rushed to a hospital a few hours later and was dying when admitted. 'Generally speaking the home treatment of panel patients is very inadequate,' Dr. Smith declares. In a recent report E. H. Worth and Dr. S. G. Askey, joint secretaries of the National Medical union, says 'It [the panel practice] puts a premium on hurried and imperfect work. It destroys the proper personal relationship between doctor and patient and lowers the standard of medical work.'"

Even the law sides with the layman and the doctor on this subject.

And now on still another tack.

"So much for the patient," says Mr. Steele, "In spite of the fact that the insurance system has made it possible for the young doctor to earn a living quickly, the doctors are complaining, chiefly of too much supervision. They are limited in their prescribing to certain drugs and are not allowed to use modern and expensive medicines. If they do so they are liable to be summoned before the administrative board for their district and fined or reprimanded. Doctors have had as much as £250 withheld from their remuneration for extravagant prescribing.

In cases of alleged carelessness they are also liable to arraignment before the committees and to fine or reprimand or even to being struck off

the panel. While some control may be necessary in such a service, the general medical opinion is that it has reduced the panel doctor from the status of an independent professional man to that of a servant of the state who must do not what he considers best for his patient but what the state will allow him to do.

"The late Lord Riddell, who was chairman of one of London's largest hospitals and a good friend of the medical profession, shortly before his death described the panel doctors as 'MEDICAL SLAVES WHO MUST PRESCRIBE ACCORDING TO CERTAIN RULES OR BE FINED,' AND IN THE SAME SPEECH HE DECLARED THAT BUT FOR THE VOLUNTARY HOSPITALS THE PANEL SYSTEM WOULD HAVE BROKEN DOWN LONG AGO."

As still another layman's argument against the system of state medicine that is worse than quackery, Mr. Steele continues

"One curious effect on medical practice has been the evolution of the doctor who is nothing more than an employe of a loan shark. Purchase and sale of practices is the ordinary rule in Britain. When a doctor wants to retire or move to another neighborhood he sells his practice to a successor, usually for about two or three years' income. When a young doctor wants to start in practice he usually has to buy an established practice. A panel practice with a thousand patients is an asset on which money can be borrowed. A tribe of loan sharks has grown up who finance young doctors in the purchase of panel practices, taking from them an undertaking to turn over all or the greater part of the income until the loan is paid, and at the same time making them sign an undated bill of sale for the practice. The loan shark can turn the doctor out and resell the practice at any time that the debtor falls into arrears.

"Perhaps one of the worst results of the panel system is the destruction of that personal friendship and mutual confidence which should exist between the patient and his family doctor. The patient feels that the doctor is his servant, paid anyhow and is liable to demand treatment for trivialities which in the old days would have been cared for at home. The doctor feels that his panel patient is exploiting him and causing him to neglect his private paying patients, who get

him when he is tired and worried by an overwhelming panel practice.

"Many patients of the better class who nevertheless come within the panel system resent being herded in a cold and often dirty waiting room with repulsive companions while waiting to see the doctor, who is turning them off at the rate of one every two or three minutes. The moral effect on the doctor is bad also, and overwork seems to have led to an increase of drink and drug taking among doctors. It is impossible, of course, to get any figures on this, but there is a steady flow of complaints to the insurance committees against drunken or drug-addict doctors. They are always sternly dealt with."

Does the United States want *that* sort of medical disbursement?

The answer would seem to be in the negative.

THE FEDERAL SOCIAL SECURITY PROGRAM PROVIDES PROGRESSIVE ALL-DEVOURING FEDERAL TAXATION

The Federal Social Security Program might aptly be called the "wolf at the door" that has eaten up the family!

It may be *Federal* but to the Man up a Tree it is *fatal* and "Funderburgian."

There are so many words, so many phrases, so many promises and clauses and whereases in the Federal Security Program that the public, in a fashion, has let the whole thing go by default. Choked into a coma by the very ponderosity of the plan, by its effluvia of vocabulary, the public has swallowed the thing whole, as the easiest way out of the difficulty.

Hark back to a quick and casual revue of the Federal Social Security Program as it grins at us across the breakfast table.

It was conceived, according to the records, in June, 1934. On August 14, 1935, it became an actuality through a congressional act and began to operate through ten different manifestations of life and activity, focusing through two major parts.

Of these one is an administrative unit, and the other, a group of operative or "line" bureaus.

In the administrative unit is found the (a) offices of the general counsel; (b) bureaus of research and statistics accounts, and audits; public improvements and informational service.

In the operative or "line" bureau are found (a) Bureau of Old Age Benefits; (b) Bureau of Public Assistance comprising: 1. state grants to needy aged; 2. state grants to dependent children; 3. state grants to the blind.

Financing for the immediate needs of these "*federalities*" is achieved by Congressional appropriations, included:

(a) For the fiscal year, ending June 30, 1936, the expenditure of the sum of \$42,500,000 of *taxes from the citizenry* of the highly overtaxed United States.

(b) The sum of \$475,253,410 available July 1, 1936, and secured from the mass pocket of the United States citizenry.

For the Social Security Program must see that there is money provided to finance both *federal* and *federal-state* activities.

The federal activities are what their name implies. The federal-state activities are as their name, too, implies, a "co-operation of federal and state appropriation" activities—which when certain requirements have been fulfilled, mean *federal grants or allocations to various states*.

Under this scheme the two major drains upon the taxpayers of the United States will be the unemployment compensation and the old age benefit system, both *branded with the trademark of "Federal."*

Under the "Federal Unemployment Compensation" there devolves upon all employers who hire eight or more than eight persons, a separate and progressive federal tax. For example, in 1936 this tax is figured on a basis of one (1) per cent. In 1937, the rate of the levy will be two (2) per cent, and in 1937, three (3) per cent, and so on in progressive mathematical ratio. As an estimated income for this fund, 1937 is expected to produce \$177,000,000, while in 1938 the estimated yield is set at \$530,000,000.

Under the other part of the plan, or the "Federal Old Age Benefit System," there will be granted a pension or retirement system to persons 65 years or over and not engaged in "gainful employment." While this gives the average citizen five years longer than did the "Osler plan" it is certainly evolved without any reference to the pension system for war veterans relicts and kinsmen which is a definite leak in the federal treasury. It is purposed to start these payments in January, 1942. Funds for these

payments are being collected in federal taxes from both the employed and the employer. Starting at one (1%) per cent. in 1937, rising to two (2%) in 1938 and during and subsequently from 1939 at three (3%), the estimated income for 1938 (?) is \$568,400,000. Estimate appraises that in forty years, the federal old age benefit fund will have to its credit no less than *fifty billions of dollars*. In this program *neither domestics nor farm laborers are included*.

The federal state allocations drop still another Ethiopian in the national wood-pile. For the present fiscal year the \$187,000,000 allocated to the Social Security Bureau will be disbursed through three main avenues. These are (a) federal grants to states, to help the blind, of \$8,000,000; (b) federal grants to states to aid dependent children, of \$35,000,000; (c) federal grants for assistance to the needy aged of \$85,000,000.

In many instances federal grants to states must be met dollar for dollar from state funds, and that, while the federal moneys must be handled by a state board, almost without exception, supposedly to aid in the distribution of the funds, there is required a *"lay advisory committee."*

The United States Treasury Department has set aside a total of \$8,000,000 for allocations to states in aid of public health work, as well as an additional \$1,320,000 for public health research.

In such allocations or allotments, the respective states must meet dollar for dollar exactly fifty-seven and one-half per cent. ($57\frac{1}{2}\%$) of the federal appropriation. Also dollar for dollar, must be matched by the states another 22.5% (twenty-two and one-half per cent.) for aid in special health problems. The remaining twenty (20%) can be granted to states as "in the judgment of 'Public Health Service' may be deemed best," it not being necessary to match dollar for dollar in funds for this last twenty (20%) per cent.

For the present fiscal year there has been allocated to the Children's Bureau of the United States Department of Labor \$6,469,000, which is to be subdivided in its disbursements as follows:

- (a) Aid to crippled children, \$2,150,000.
- (b) Child welfare services, \$1,200,000.
- (c) Maternal and child-health services, \$2,820,000.

Allotments for maternal and child health services and for aid to crippled children must be met dollar for dollar by the states but the allocations for child welfare work need not be matched.

Even so the burden laid upon the *states*, and *par consequence*, the *taxpayer* through the *doubled state and federal taxation* by the "Federal Social Security Program" would seem to be a perfect example of the attempt of a bewildered man to "lift himself up by the bootstraps."

DOCTORS MUST KEEP UP AN AGGRESSIVE ATTITUDE IN THE MATTER OF COMPULSORY HEALTH INSURANCE

Starting as far back as 1916, Illinois Doctors led a campaign of education against Compulsory Health Insurance. The campaign was active over a period of years and culminating in 1920 in a resolution at the New Orleans meeting of the American Medical Association condemning outright the idea of compulsory health insurance in America.

Today certain foundations and welfare workers and medical politicians are again advocating Compulsory Health Insurance. Recently William Trufant Foster, a well known economist, before the Academy of Political Science and the College of Physicians of Philadelphia, stated that it is folly to burden physicians any longer with business affairs which they have notoriously mismanaged and for which they are not trained, in which they are not interested and which interfere with single hearted devotion to patients, which implies that medicine should be taken over by the state.

There is a preponderance of evidence that powerful forces and agencies are again working towards development of Health Insurance in the United States. There is also substantial evidence that foundations, philanthropists and politicians are proceeding at an alarming rate that leads to the socialization of medicine. In a few months measures looking in that direction will be presented before state legislatures. Powerful forces are behind these measures. All that the doctors will have to do to insure their success will be to do nothing. When the physician wakes up to find that he is only a hired man, sent here

and there by some civilian official, it will be too late.

We suggest that the officials of State Medical Societies as well as the individual physician assume a more aggressive attitude in the matter of compulsory health insurance in order to avert a repetition in the United States of the disastrous consequences that attended the adoption of health insurance in other countries.

FORGING AN ENDLESS CHAIN TO KEEP MEDICINE IN BONDAGE

The insurance code demands constant expansion of medical service, while the management at the same time fights adequate medical compensation. The doctor is over busy. He has no time to renovate his ideas by consulting the monthly records of medical progress.

The personal relation of patient and physician is destroyed and a purely cash connection retained with the organization. Commercialism is rampant and professional control of the medical problem eliminated. Insurance service is always second class since the better practitioners will not apply. In only six of the nineteen countries having National insurance were the doctors satisfied with the service.

Every conscientious physician sees in state medicine a vicious forging of an endless chain to keep medicine in bondage, stifle medical progress and to enslave the physician so that his faculties for research atrophy and die.

ENDOCRINES AND THE SKIN

Every cell of the body is influenced by the internal secretions. Since the skin, which should not be regarded merely as a covering to the body, is an important organ coordinating with other organs, it is evident that the relation of the endocrines to the dermatoses must be one of importance. The skin reacts to the endocrines directly, through the blood stream, or indirectly, by way of the nervous system. Many cases of cutaneous disease have been influenced by organotherapy; yet great caution must be exercised in approaching the conclusion that a definite cutaneous condition is produced by a disorder of the endocrine glands. However, application of our present-day knowledge resulting from actual clinical observation, combined with accepted scientific facts, warrants the acceptance of certain procedures and conclusions.

The skin changes that occur with dysfunctions of the internal secretory glands, manifest themselves in texture, color, pigmentation, hair growth and the formation of growths.—Dr. Oscar L. Levin, in *M. J. & Rec.*, Dec., 1933.

THE FREI TEST FOR LYMPHOGRANULOMA INGUINALE: EXPERIENCES WITH ANTI- GENS MADE FROM MOUSE BRAIN

Maurice J. Strauss and Marion E. Howard, New Haven, Conn. (*Journal A. M. A.*, Feb. 15, 1936), state that their experiments show that, irrespective of whether the mouse had been infected with lymphogranuloma inguinale or not, an antigen made from the brain of a mouse may induce a reaction similar to the Frei reaction when injected intradermally. In this series of experiments nearly half the reactions to mouse brain antigens injected intradermally into normal subjects were of such a nature as to make them indistinguishable from what is recognized as a positive Frei test, and some of the reactions were of such size and character as to make them easily mistakable for positive Frei reactions. False reactions may result from freshly prepared mouse brain antigen but in their experience are to be watched for when using material that has been stored a month or more. The indications are also that preparation of the antigens with saline solution instead of broth does not influence the reaction. It would seem, from one experiment, that if the antigen is preserved in the dried state the appearance of the false reaction may be prevented for a period of one month, although the results of another experiment make it seem that, in some antigens at least, the change may take place even in the dried state by the end of two months. The regularity with which tested Frei antigens made from human material were negative is conclusive proof that the normal subjects did not have inguinal lymphogranuloma; and even if the total number (thirteen) of subjects was small the fact that definite reactions to antigens made from the brains of normal mice occurred in all of them, and reactions indistinguishable from positive Frei tests in many instances justifies the conclusion that sensitivity to mouse brain is common enough to lead to a large number of false positive reactions if mouse brain antigens are used for the diagnosis of inguinal lymphogranuloma.

HOW DOES SICKNESS INSURANCE AFFECT DIAGNOSIS

Since insurance administration is controlled by cash considerations, quantity, rather than quality, of medical service is stressed. The essentials of a good diagnosis are time, patience, careful attention to details and sympathetic relations between a skilled practitioner and a cooperating patient. Insurance compels haste and tends to create antagonism between patient and physician. By removal of the essentials mentioned, insurance delivers little more than the dregs of a real diagnosis. The effort to substitute for these essentials something that will fit the cash standards of insurance causes exaggerated importance to be given to mathematical and mechanical analyses, pictures and measurements. But these are only one set of valuable, but often isolated, facts that must be integrated with the personal interview, history and individual examination through the knowledge and experience of the physician. Insurance tends to restrict this most vital part of the diagnosis.—*Sickness Insurance Catechism.*

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Address all letters and communications to the Chairman.

Now that the presidential election is past, we can return to the discussion of some of our other outstanding problems in medical economic matters. There are so many problems in which study is needed that there is almost unlimited work to be done.

The question of Group Hospitalization is far from settled and we hope in the near future to have a report from a member of this committee on the progress of the movement over the United States and the degree of success attending the plan. It is still a controversial subject and there are ethical objections to both the plan and the way the same is being conducted. In Chicago, the special committee, appointed by the Chicago Medical Society, is far from satisfied with the plan proposed for Chicago and I am informed that an article on this question will be a part of this issue of the *ILLINOIS MEDICAL JOURNAL*. This is written by a Past President of the Illinois State Medical Society, Dr. Charles B. Reed, and should be read by every person in the medical profession who is interested at all in the subject of Group Hospitalization and all of us should be interested for there is interest in the subject on the part of the laity in all parts of the state. For a physician to give an opinion on the feasibility of the plan for his city or community, he must know how the plan is operated and the success attending it in other places. As mentioned above this subject will be kept before you from time to time, by this committee.

Dr. Floyd S. Winslow, President of the Medical Society of New York, has written a most interesting article on the subject "Why Am I a Doctor?" This was read at a meeting of the eighth District Branch of the Medical Society of the State of New York at Buffalo, October 15, 1936. I am asking the Editor, Dr. Whalen, to print the same in this issue of the *JOURNAL* either in this column or any other convenient part, so that this talk may be available to every member of the medical profession in the state of Illinois. It is

a most inspiring article, well written and concise. It will be of great value to the medical profession and may stimulate some of the "Let George Do It" men to assume a little more interest and responsibility in the work of organized medicine and its attempts to carry the message of the medical profession to the laity. Only when a united medical profession assumes the task of enlightening the laity on the problems of the profession will the laity understand the difficulties under which the medical profession is working toward its goal of a healthier country and better medical service to all.

Early in November the Committee on Medical Economics hope to have another meeting to discuss further the economic problems of the profession as well as the progress we have made in the past two months in the study of the same. We hope to have something definite to report to you after that meeting, for each member of the Committee was assigned a special subject for investigation and report. We hope to have with us at that time the officers of the newly formed Association of Members of the Attending Staffs of the State Hospitals of Illinois. They will undoubtedly have some interesting suggestions to make in regard to the manner in which the medical work of the state institutions is carried on and should be able to convince us that lay control of medical men does not result in the best of medical service.

Dr. Harold Camp, Secretary of the Illinois State Medical Society has prepared an article on the subject, "The Educational Side of Medicine" and the same will follow immediately in this column. We hope you will read both this article and the one by Dr. Winslow referred to above. If these men take time to write articles, surely the rest of us have time to read them and think over what we can do to help in the work.

E. S. HAMILTON, M.D.,

Chairman.

THE EDUCATIONAL SIDE OF MEDICINE

Thirteen years ago, at the annual meeting of the Illinois State Medical Society, the House of Delegates unanimously voted to establish an Educational Committee to give various types of service to both the component medical societies and various lay organizations requesting aid.

Owing to the fact that no appropriation of money was made for the work, it was decided that the membership would be asked to make donations according to their individual desires to start the work, and the Council was authorized to name the committee to make the necessary plans for the operation of the Educational Service.

From these actions taken in 1923, the Educational Committee of the Illinois State Medical Society with its many present day activities was developed. Hundreds of speakers have been listed to make talks before various lay groups, and thousands of these talks have been presented. In addition to this type of service, hundreds of professional speakers have appeared before many county medical societies, diagnostic clinics have been conducted under direct supervision of county societies, clinical teams from our Class A Medical Schools and from many large hospitals have presented interesting programs for societies, hundreds of newspapers have received regular supplies of material for health columns, an average of five hundred radio health talks have been made each year, and all of these various services have been presented through the Educational Committee.

Even today, some prominent members of the medical profession do not believe it is advisable for physicians to talk on various phases of health and right-living before lay groups, because many of them believe the efforts of the individual presenting these talks are not thoroughly appreciated.

Today more than ever before, many organizations such as the Parent-Teachers' Association, the dinner clubs, Federation of Woman's Clubs, and many others, believe it is advisable to have presented at fairly regular intervals, talks on health. The medical profession in Illinois and elsewhere, through their many endeavors, has made many new friends and allies through this type of work.

Every physician has a store of knowledge

which will be of value to his lay friends, and he should use every opportunity made available for the presentation of same when requested to do so. The history of medicine in the United States, beginning with our Colonial days, when the more successful physicians were either educated in Europe or had been able to take additional work across the ocean, the development of medical progress, medical education and hospitals, the many developments in every branch of medicine and surgery were all made abroad, until today we find that the large majority of these advances have been made in the United States. This growth of Medical Science is interesting to the average American citizen.

When we relate how medical progress in foreign countries burdened with some form of Governmental supervision of medical practice has been retarded, while continual progress has been made in this country, we can convince the most skeptical that we do not need any basic change in our form of providing medical care in the United States.

We know today that many people go to a Chiropodist for information, and perhaps treatment for painful feet, and some members of this profession, believing that their anatomical limits are between the tips of the toes and the knee, frequently treat varicose ulcers and even inject varicose veins. Most people do not realize, however, that many times painful feet result from some systemic disease, and their hope for relief lies entirely on their going to the physician who will give them a complete physical examination in an effort to find an underlying cause for the symptoms.

In most instances it is perhaps no more ridiculous for people to go to someone outside of the medical profession for the relief of painful feet than it would be for them to go to the milliner for relief from a headache.

Backache, as we all know, is a symptom of many diseases, as well as the result of continual strains, or perhaps some injury, yet many women believe that all they need for relief of their troubles is to go to a corset fitter and receive some form of brace, when in reality, they need to seek medical advice for the relief of the cause of this symptom.

We know that many other common symptoms are due to some systemic ailment which physi-

cians only are able to determine, and in our health talks many times these facts may be brought out before lay audiences.

The medical profession, having been charged with the responsibility of caring for the health of nations for centuries, naturally should be expected to give people without medical education, the necessary information to permit them to enjoy the best of health possible under existing circumstances and conditions.

Many of the proponents of schemes for the socialization of medicine and regimentation of physicians have too often stated that the medical profession jealously guards all health secrets and refuses to tell people more about healthful living. The truth is that most physicians today are anxious to do their bit in an attempt to help solve the ever increasing community problems. Many of these are of interest to the physician from a community health standpoint, while all of them are of interest to us as taxpayers.

Health education, in our opinion, is equally important with that type of education which develops as a result of the efforts of our many types of educational institutions, and all physicians today are trained to act as educators, and should not hesitate to give all possible information along health lines to the laity whenever requested to do so.

By doing our bit in this way, we are going to make more friends for the medical profession, and we should be able to thoroughly appreciate this fact when we need assistance in solving many of the more important modern medical economics problems.

HAROLD M. CAMP, M. D.,
Monmouth, Illinois.

October 20, 1936.

WHY AM I A DOCTOR?

FLOYD S. WINSLOW, M.D.,

President, Medical Society of the State of New York.

NEW YORK, N. Y.

Why am I a doctor? Did you ever ask yourself this question? Perhaps it will not be amiss, once in a while, if we examine this basic question. It will be good for us to indulge in what might be called a "periodic self-examination."

Certainly we are not doctors because of the

money that is in it. Generally speaking, our companions of early years who selected business pursuits have outstripped us in gathering together the collection of objects which represents monetary success. Why did we go into medicine? Why do we stay in medicine? Why do we live for, fight for, and sometimes die for medicine?

Glory? Where is the romance in our pursuit, for those who follow it? It is said that every ship is a romantic object but the one we are sailing in, and it may also be said that medicine has romance for those who do not practice it. We work in the quiet of the sick room, or the hospital, we walk daily with troubled humanity. Our satisfaction can only derive from the knowledge that we have performed our obligation to heal the sick, in this way paying the debt we owe for the accumulated knowledge and experience of the ages which has been made available to us.

Perhaps this feeling of responsibility is an ideal which we do not always reach, but is it any less our ideal? We can say, without fear of contradiction, that the great majority of doctors are imbued with the purpose to discharge this obligation. And I think the time has come when the public should know, should be definitely told, that the most important thing it should inquire about, when selecting a doctor, is whether he is genuinely interested in his calling, loves his profession, and is not only intent to attain ability as a physician, but feels a responsibility to advance the capacities of the medical profession as a whole. This is, as you know, the main object of medical societies. The man who has such a goal as this in mind as a destiny, is a man who can be fully trusted with the lives of men and women and children.

I will go even further than this and say that I think I stand here facing a group of men who have stood the test of this criterion. In other words, this test of character. You have joined your county medical society. You consider that when you were given the right to practice medicine, you assumed an obligation to do your part to see that medicine, as a profession, preserved its integrity. Now gentlemen, the only way integrity can be attained or retained, is to work for it. When you join your local medical society you work for the integrity of yourself and the group. You render yourself open to the criticism of your peers. You say, in effect, "I intend to behave myself, to put the interest of my patient

Talk delivered at meeting of the Eighth District Branch of the Medical Society of the State of New York at Buffalo, October 15, 1936.

above my own, to observe all the other provisions of the oath of Hippocrates, in letter and in spirit. And not only do I intend to do this, but by joining the county medical society *I have to do it*—I lay myself open to penalties if I do not."

I think the public should be told that a doctor who is a member of his county medical society is a better doctor on this account. I think a patient should ask his doctor, if he is not a member of the medical society, why he is not a member. It is possible, of course, that a physician may be of the highest rank, and not be a member, there is nothing compulsory about it, but as I go over in my mind the names of the physicians who I find have lived so that their excellence is beyond possible question, I do not think I can name one who is not a member of his county medical society.

Now if our loyalty to our profession is merely another form of loyalty to society—to mankind—a point comes up which I wish now to mention. The world today is facing deep and important problems. Confusion abides in the minds of men. Quacks are abroad plying their trade in the realm of economics and sociology as well as in that of medicine. Large groups of people are assuming to know that which they do not know. They are contemptuous of the experience of the past, and of the experience of individuals, they deery special skills, they substitute rhetoric for reason. So we have another obligation, just as basic as the medical obligation, and that is a social obligation. We must reach out and interest ourselves in these questions which are quite outside medicine, but which need a generous skepticism to counteract what often seems to be a pathological optimism. We have not repaid our debt to society when we merely heal the sick. In some respects, the well need healing, too. That is to say, if we are not to have all our values, all our superiorities broken down. "One man," Mr. Dooley said, "is not only as good as another, but a damned sight better." There are no experts left. There are only simplifiers. And what are we doing about it?

This is not a matter of partisan party lines: the same kind of thinking is to be found everywhere. The public is coming to believe that it is capable of exercising its opinion, its judgment, on difficult technical problems, with no knowledge, no experience. Further than this, it expresses that opinion in response to a catch-word.

It does not even make the effort to think a problem through on a rational basis, using the information, however inadequate, which it has in its possession. These are symptoms of grave danger. Sooner than we think, we may see the complete triumph of mediocrity. And there is only one way in which we can make effectual remonstrance, and that is at the polls on election day. Yet I am told by those who have made inquiry that the proportion of doctors who vote is only one in three. Need I say that this is a disgraceful record? Need I urge you to consider its significance deeply, when so many public policies are formulating which may advance or retard the healing art? You know what various candidates stand for, and in general, if not specifically, what type of legislation may be expected of them. Your knowledge, your judgment, is ineffectual unless you vote.

After you have asked yourself why you are a doctor, ask yourself another question, a larger question. Are you a citizen, in fact rather than in name, if you fail to exercise the obligations of a citizen in exchange for its advantages? If we work in our own societies to preserve the integrity of Medicine but fail in the larger society of American affairs to preserve the integrity of our civilization, efforts on the one part may easily be frustrated by inaction on the other.

2 East 103 Street.

Correspondence

HEALTH SECURITY

To the Editor:

This article is a reply to an article on Health Security by Thomas Parran, Jr., M. D., F. A. P. & S., Albany, New York, published in the August issue of the *Medical Woman's Journal*, Cincinnati, Ohio.

Your article on Health Security in the *Medical Woman's Journal*, August issue, was very fine and worthy in as far as it went, but to me, the one and most important factor in health was overlooked and has been by all health officers, social workers, and officials appropriating money to carry on health programs.

This great factor is "Syphilis" and yet rarely do you hear those who advocate preventative medicine, also advocating a public health program of defense and education against "Syphilis."

Is tuberculosis, typhoid fever, diphtheria, scarlet fever and all other communicable diseases, any more deadly in the effect and after results upon the individual than is syphilis?

Can we point with pride, the accomplishment, in wiping out, so to speak, the other less deadly communicable diseases and overlook the one, the results of which cause insanity, locomotor ataxia, general paresis, epilepsy and all the other physical defects handed down until the third and fourth generation?

Can we point with pride upon the results of immunization against a few communicable diseases and yet have an annual report of the enormousness of the venereal disease problem?

Can we point with pride the accomplishment and lose sight of the fact that (4) per thousand individuals in the United States have a fresh syphilitic infection and (8) per thousand an acute gonorrhea annually, and that more than a 1,000,000 people in the United States seek medical aid for syphilis and 1,500,000 for gonorrhea and this number disseminates perhaps five times, before being brought under medical control?

Has public health really accomplished what it is boasting of or has it failed in its purpose, in really reaching the vital problems of health today, namely, alcoholism, prostitution, venereal disease and drug addiction?

Has it escaped the minds of those in charge of public health that 148,000 potential mothers of this country have active syphilis and that many innocent children may be born handicapped by an inheritance, the results of which will remain through life, be transmitted and through no fault of their own and because of which, they may become a criminal, a moron, develop insanity or any other of the serious results of this disease

Has it escaped the eyes and ears of those in charge of our health problems, that as a treatment problem, syphilis ranks first among the contagious diseases of man?

Has it escaped the minds of those in charge of health programs, that syphilis and gonorrhea are communicable diseases, quarantineable, and should be placarded for one month?

Has it escaped the minds of those in charge of health programs that with the rapid increase that is occurring due to alcoholism, prostitution

and drug addiction, and along with this, neglect in seeking medical aid, the time will come, when every one will be in danger of acquiring a deadly communicable disease, not from the standpoint of fatality, but the results that follow through life?

Has it escaped the minds of our health workers, the economic loss, the cost to the taxpayers of maintaining institutions for the care of these people?

Has it escaped the minds of our health workers, these same infected people, along with mental defectives, those on relief (perhaps through no fault of their own) and again because a certain class have "never" worked and never will, but "multiply," these are the progenitors of our race today?

To my way of thinking, the Social Security Act in providing the large sum of money to carry on a health program, is inadequate, in not specifying, the money should be used in the prevention of two of the greatest factors a health program ever encountered: first, and most important, the elimination of "syphilis" by quarantine and public education, the same as for tuberculosis and all other communicable diseases, through lecture, placards in public places, in schools and colleges, Parent Teacher Associations, Women's Clubs and in every public gathering, on the screen and over the radio.

The second, sterilization and by this I mean "National"—of the physically unfit, including syphilitics, mental defectives, criminals; or an adequate "National" legalized birth control method, by which reproduction in this class, is reduced to the minimum. Until this is accomplished, and with a reduction in alcoholism, prostitution and drug addiction, our race in the years to come will have degenerated to a low level.

Public health should be taken out of politics, out of the hands of the social workers, and given back into the hands of legitimate medicine, to supervise, control and improve.

Nothing can be perfect with the greatest controlling factor overlooked.

Venereal disease must be eliminated: the spread is unbelievable, the economic loss fabulous, the results to health, statistics, public institutions and medical reports will reveal.

Can public health overlook this fact and claim results?

You answer.

N. GENEVIEVE CHIPMAN, M. D.
Savannah, Illinois.
Oct. 1, 1936.

BENZEDRINE SULPHATE

To the Editor:

Benzedrine has come into prominence lately. Many investigations and original articles are appearing in the press from time to time. The drug has not yet been given a proper setting as a therapeutic agent.

I am therefore offering you a brief synopsis of a series of investigations made by the writer on this drug. The investigations are not positive in their results, but this article will probably prevent some other investigators from covering the same field.

ACTION OF BENZEDRINE SULPHATE IN PATIENTS WITH DEMENTIA PRAECOX. A REPORT OF TEN CASES.

The search for the cause of dementia praecox has led investigators into many fields. Some have sought for the cause in the anatomic structure of various organs; some have attempted an explanation in the dysfunction of the various organs, while others have sought a psychogenic explanation.

Kraepelin suggested it was based on a disorder of metabolism; Mott believed it could best be explained by a disorder of the endocrines; Lewis proposed an aplasia of the circulatory system; Kreitz pointed out that it occurred in individuals of a dysplastic physical type; Cotton emphasized its occurrence in people possessing an area of focal sepsis. Finkelman holds that it occurs in persons with a physiological disturbance in the hypothalamus; Adolph Meyer believes that it is essentially a maladjustment of the individual to his environment.

No theory proposed has been universally accepted. Many physical symptoms of dementia praecox indicate a dysharmony between the two divisions of the vegetative nervous system. Many symptoms point to a hypotonic condition of the vagus group.

The literature on benzedrine sulphate seemed to indicate that this drug is a stimulant to that group of nerves.

In May a group of ten dementia praecox pa-

tients was selected and the drug was administered for a period of thirty days. During this period the pulse, respiration, temperature, size of pupils and blood pressure was taken daily. Blood chemistry and basal metabolism rates were taken bi-weekly. The psychologic reactions of the group were taken bi-weekly by the following tests: Sustained attention by counting backward and the Franz tapping test; memory by the Helen Wooley test; association by Woodworth and Wells test and Kimbel's match board tests.

Tests of sustained attention, by counting backward, indicated improvement in three, unimprovement in five and no cooperation in two. Sustained attention (Franz tapping test) was improved in four, no improvement in five and no cooperation in one. Memory (the Helen Wooley test) showed improvement in three, no improvement in two and no cooperation in five. Woodworth and Wells association test demonstrated improvement in one, unimprovement in five and no cooperation in three. Reaction time (Kimbel's match board) was improved in two, unimproved in five; no cooperation in three.

Bi-weekly records of reactions and conduct were made in the form of progress notes. The records indicated no outstanding physiological changes during the course of investigation.

The only facts worthy of note were that the pulse rates were uniformly above normal, while the temperature curves were, except for brief intervals, below normal. Blood chemistry did not materially change in any respect.

The sugar content was within normal limits in all patients. Five showed an increase in blood sugar, while five showed a decrease during the course of experiments.

The series of tests were discontinued at the end of thirty days, because it was found that one of the group had gained four pounds in weight, one had gained one pound, while eight had lost from one to ten pounds during the period of investigation.

From the above it is concluded that benzedrine sulphate failed to stimulate the vagus division of the vegetative nervous system and that whatever existed before its administration persisted at the conclusion of the period of treatment.

C. H. ANDERSON, M. D.,
Elgin State Hospital.

EDUCATIONAL COMMITTEE PROMOTES HEALTH EDUCATIONAL PROGRAM

September and October

SPEAKERS' BUREAU:

48—Doctors were scheduled to address the following lay organizations: Men of the Y.M.C.A. Hotel, Chicago; District meeting Illinois State Nurses Association; County Woman's Auxiliary, Laity Day; Parent Teacher Association District Conference; Health Chairmen, Illinois Federation Women's Clubs; Lions Club, Rotary Club, County Teachers Institute, Parent Teacher Associations, Women's Clubs, County Home Bureau, College Clubs.

21 programs were given downstate and 27 in Chicago.

The Committee is asking all organizations requesting health programs to guarantee audiences of at least fifty adults and if possible to pay the expenses of speakers.

SCIENTIFIC SERVICE:

36—Programs were arranged for county and district medical societies. Counties using this service were Bureau, Union, Coles-Cumberland, Elmhurst Physicians Club, St. Anne's Hospital of Chicago, Sherman Hospital of Elgin, McDonough, Franklin, Randolph, Iroquois, Will-Grundy, DeWitt, Lee, St. Joseph's Hospital of Elgin, 8th Councilor District, Carroll, McHenry, LaSalle, Tri-County Medical Society.

One of the outstanding features of the work of this Committee during the period was the heart clinic arranged for McDonough County Medical Society. Doctors brought in their patients for examination and the clinic proved to be a veritable post-graduate course. Similar programs can be arranged for other county medical societies.

The Educational Committee assisted county medical society secretaries in giving publicity to these scientific programs and also prepared and mailed out invitations to doctors.

Those receiving this assistance were: 245 notices for Fifth Councilor District meeting, 255 notices of Heart Clinic and meeting, McDonough County; 219 notices, Bureau County; 185 notices, Lee County; 308 notices, Randolph County; 149 notices, Franklin County; 600 notices, LaSalle County; 138 notices, Perry County; 673 notices of Tri-County meeting at Kewanee.

RADIO

Forty radio programs were given during the two months over WBBM, WJJD, WAAF. The programs over WGN will be resumed November 10th.

The Committee has tried out a number of new ideas in its recent radio programs. A series of eight talks called "A Doctor's Diary" were given by one doctor and his secretary. This series proved very interesting.

Another program consisted of a round table discussion by three members of the Chicago Ophthalmological Society.

Still a third program consisted of a talk by a doctor on the subject of CANCER, with the radio announcer asking questions at the close of the formal talk.

PRESS SERVICE

939 releases of seasonable health educational articles were sent to newspapers of Illinois.

234 releases were sent to Home Advisers in the state.

384 health articles to Chicago Libraries.

672 health articles to downstate libraries.

The following health releases were written and approved: School Begins, Foot Sore and Weary, Our Leisure Time, Give Them Sight, Initiating Baby Into the Home, Getting Along with Defective Heart, The Education of the Doctor, Growing Superior Children, Dangers in Drugs, Health Check-Up for School Children.

Assistance was given County Medical Societies in establishing contacts, through newspaper publicity, between local medical societies and the public.

72 releases re Fifth Councilor District meeting.

126 releases LaSalle County Medical Society.

67 releases McDonough County Medical Society.

72 releases Clark County Medical Society.

70 releases DeWitt County Medical Society.

38 releases Lee County Medical Society.

44 releases Bureau County Medical Society.

33 releases Winnebago County.

72 releases Tri-County Medical Society.

10 releases Englewood Branch Chicago Medical Society.

10 releases North Shore Branch Chicago Medical Society.

MISCELLANEOUS

The Educational Committee was invited to have an exhibit at the Annual Meeting of the Illinois State Nurses Association at the Palmer House October 29th and 30th. The display showed the program of the Committee and the services available to organizations of the State.

During the month of October the Committee had displayed material pertaining to cancer in one of the show windows of the Marshall Field & Co. Annex Building. Dr. F. L. Rector very kindly had the exhibit put together for the Committee. The purpose of the display was to show the general public that the only three recognized ways of treating cancer at the present time are surgery, x-ray and radium. The window also contained an exhibit of some of the false treatments and drugs being used in this disease.

The exhibit for the month of November will be devoted to information about the feet and their troubles. This material is being prepared by Dr. Walter R. Fischer.

Representatives of the Educational Committee met in conference with the Chicago Board of Education, Chicago Medical Society and Parent Teacher Associations on October 28th.

Requests for information about the work of the Educational Committee have been received from North Carolina, Iowa and Michigan.

Conferences have been held with Health Chairmen of the Illinois Federation of Women's Clubs, Illinois Congress of Parents and Teachers.

Respectfully submitted,

JEAN MCARTHUR, *Secretary*.

WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

PUBLIC RELATIONS MESSAGE TO AUXILIARY MEMBERS

The Public Relations Committee this year is attempting to include in their committee every member of the Auxiliary. They are stressing the fact that it will be only when every member is conscious of her value in public contacts that we may hope to accomplish our maximum help to the Medical Society and the public.

This year be on your mark for legislative information and ready to respond in the fight to safeguard the public health.

Within our organization we urge education and discussion of the ways and means for better self education and wiser methods for the dissemination of vital truths to the public, specifically through groups of women and children.

Read Dr. Cramp's articles on nostrums and try and remember the names of these pseudo cures that you may better protect the public.

Here too is the place to make sure every member is aware of the instruction from her local Advisory Committee from the Medical Society.

We urge the reading of both the editorial articles and the Auxiliary messages in the National, State and County journals,—the reading of the *Illinois Health Messenger* for the trend of the health in given localities—thus knowing what point should be stressed in lay education.

Outside the organization meetings—and this is where public contacts mean so much and where the work falls on every member's shoulders alike,—

Build up the habit of periodic health examinations in the minds of your contacts. Thousands of lives can thus be saved. It is well worth while.

Place the "*Illinois Health Messenger*" in school groups and others where its publication of health statistics may lead to inquiries for fuller information on prevention and control.

Encourage the reading of the books about doctors and discuss them where it may encourage others to read them.

Listen to the Health Broadcasts, local, state and national,—(the dramatized versions are again on the air)—turn them on when you have guests and help them form the habit—for the health of the nation.

Join whatever other organizations you can and thus increase your value as a public relations contact.

On your Laity Days each year do your share to see that your guests of the day feel that they too are not only receiving valuable health information, but that here too is a group of friends to whom they may turn for help at all times. Encourage their reading of *Hygeia*, as an authentic source of general information. See that their needs for speakers on health subjects are fulfilled.

If it is agreeable to your Advisory Committee, we are encouraging that attractive parties be given by the Auxiliary as a means of extending our friendship, meanwhile obtaining from the laity, the money with

which we afterward entertain them. A social justice, since the work is entirely ours and the benefit theirs.

First and last we say to each member, your special duty is to protect the public health through your contacts with women and children, especially through Women's Clubs, P. T. A.'s library contacts and so forth, and see that pseudo health measures are exposed by furnishing the truth through lecturers.

The enlarged list of books about doctors follows:

BOOKS ABOUT DOCTORS

Rats, Lice and History.....	Dr. Hans Zinsser
The Doctor in History.....	Haggard
Behind the Doctor.....	Clendening
The Doctor Explains.....	Major
Medicine: A Voyage of Discovery.....	Loebel
Life of Pasteur	
Arrowsmith	Lewis
Dr. Serecold	Helen Ashton
The Magnificent Obsession.....	Douglas
My Brother Jonathan.....	Frances Brett Young
American Family	Faith Baldwin
Arches of the Years.....	Sutherland
Of Human Bondage.....	Somerset Maugham
San Michele	Munthe
Private Worlds	Phillis Bottome
Dr. Nye of West Ostable.....	Jos. C. Lincoln
Great Doctors of the 19th Century.....	
Man the Unknown.....	Carrel
100,000,000 Guinea Pigs.....	
You Must Relax.....	Jacobson
Fads and Quackery in Healing.....	Fishbein
Skin Deep	
Mind That Found Itself.....	
Outwitting Our Nerves.....	Beers
Dr. Oschner's Book on Socialized Medicine.	
Plays:	
Men in White.	
The Yellow Jacket.	

Be sure and get the enlarged list of books about doctors from your Public Relations Chairman.

MRS. JOHN A. WOLFER,
PUBLIC RELATIONS CHAIRMAN,
Chicago.

WEIGHT REDUCER CAUSES BLINDNESS GOVERNMENT AGAIN WARNS PUBLIC

Dinitrophenol, Sold Under Many Names, Also May Damage Liver, Kidneys, Heart, or Sensory Nerves. It Causes a Blood Disorder, and Even Death

Blindness from the use of dinitrophenol for reducing weight has not stopped the use of the drug in spite of repeated warning, says W. G. Campbell, Chief of the Federal Food and Drug Administration.

The eye cataracts observed in dinitrophenol poisoning develop with a rapidity and malignancy hitherto unknown, and result in total blindness within a comparatively short time. This drug may produce acute poisoning, the symptoms of which are nausea, stomach and intestinal distress, sweating, flushed skin, high fever, rapid breathing, and muscular rigor followed by death. The drug also damages the liver, kidneys, heart and sensory nerves. It produces agranulocytosis, a blood

disorder also noted in cases of poisoning with amidopyrine, a common ingredient of medicines for the relief of pain.

The Food and Drugs Act, according to Mr. Campbell, is practically inoperative against this public health hazard. He says, "The only application of the law to these products is through some misstatement of fact or some false and fraudulent curative claim in the labeling. In any event, the law can be invoked only when the product has been transported across a State line."

"There is little doubt," continues Mr. Campbell, "that the cases of progressive blindness recently reported in California are the result of medication with dinitrophenol. It is to be regretted that the present Federal law is silent with respect to the control of dangerous drugs."

Dinitrophenol is sold under many fanciful names sometimes accompanied by a statement of the presence of the drug itself. Some of the names under which it has been or is now being sold are reported by the Food and Drug Administration as follows: Nitromet, Dinitrolac, Nitra-Phen, Dinitrilo, Formula 281, Dinitrose, Nox-Ben-Ol, ReDu, Aldinol Dinitrenal Prescription No. 17, Slim, Dinitrole, Tabolin and Redusols.

"It is interesting to note," said Mr. Campbell, "that all the so-called reducing preparations on the market fall into three categories: first, laxatives that deny the body the benefit of its food intake, as the salts, crystals and herb teas; second, obvious frauds that depend for effect upon the stringent diets prescribed as part of the 'Treatment', as 'Syl-Vette' and 'Stardom's Hollywood Diet'; and third, the unquestionably effective but dangerous articles containing thyroid or dinitrophenol, both of which act by speeding up the utilization of food. All of them are unwarranted impositions upon the public, which cannot evaluate claims made for the preparations, and cannot readily appreciate the harm that may result from careless use of the products."

DISAPPEARANCE OF THE PHYSICAL SIGNS OF RHEUMATIC HEART DISEASE

According to Edward F. Bland, T. Duckett Jones and Paul D. White, Boston (*Journal A. M. A.*, Aug. 22, 1936), it is well known that the signs of valvular disease which appear during rheumatic fever or later usually persist throughout life and often progress during subsequent years. It is less well known, however, that these signs of cardiac involvement may occasionally regress and ultimately disappear. Isolated instances have been observed and commented on by numerous clinicians but accurate data on the incidence and subsequent course of this fortunate group have not been recorded. Coombs has expressed the opinion that in as many as 31 per cent the signs of rheumatic heart disease once present may later disappear. To the authors this figure appears too high and his published data as to both the original condition and the subsequent observations are inadequate for critical analysis. A comprehensive study of rheumatic infection and heart disease in progress now for a number of years presented an opportunity to investigate further this occasionally observed but imperfectly understood aspect of the course

of rheumatic heart disease in young people. In a series of 1,000 young patients with the physical signs of valvular disease of the heart who were examined at frequent intervals during the first decade after the onset of rheumatic infection, the authors have observed a regression in these physical signs in a considerable number and the total disappearance of all clinical evidence of heart disease in eighty-three instances. In a few, cardiac dilatation during the stage of active rheumatism may have been responsible for the murmurs usually considered characteristic of valvular disease. If this is true, it is the probable explanation for the relatively rapid disappearance of the cardiac murmurs in a small number during the first year. It is the author's belief, however, that the majority of this group of eighty-three patients had injury of the valve cusps (usually the mitral) at the time of rheumatic fever. That it was of minimal degree in each instance seems most likely, so that the residual scarring has produced no significant deformity or characteristic murmurs. It is of interest that although cardiac enlargement (dilatation and possibly pericarditis) was in some cases of extreme degree, it has in each instance subsided. Six borderline cases remain questionable. It is to be noted that the authors have not observed in a single instance in these children the disappearance of either (1) a very loud diastolic murmur ending in a loud crescendo presystolic roll or (2) a loud aortic diastolic murmur and the peripheral circulatory signs of free aortic regurgitation. It will be considerable interest and importance to follow further this group of eighty-three patients (one is now dead) to determine whether in some at least the signs of valvular disease (especially mitral stenosis) may later and insidiously reappear without the recurrence of clinically recognizable rheumatic infection. Although as yet the data are inconclusive, we have evidence from a group of patients with so-called potential rheumatic heart disease which suggests that later mitral stenosis may slowly develop in a few instances.

NAGGING PARENTS

Some parents actually try to scold health into their children. Health, however, is not understandable to children, at least before they reach twelve years, and when we plead with a child to safeguard his health, he may begin to imagine there is something the matter with him; else, he reasons, why should mother or father talk so much about it? A sense of insecurity may develop. Thinking too much about one's body is enough to bring on sickness—mental sickness at any rate—and it is a very difficult condition to cure.

Many of us are victims of the days when child psychology was not so well understood and when nagging was the nearest our parents ever got to constructive discipline. The fears engendered in those early years left an indelible impression that accounts for peculiarities and prejudices which may handicap us for life. Let us avoid passing on this error to the next generation, by remembering that *nagging never pays*.—*Florida Health Bulletin*.

Original Articles

GROUP HOSPITALIZATION

CHARLES B. REED, M. D.

CHICAGO

The medical profession is again confronted with a new problem in practice. Group Hospitalization is now on the march and since this movement may seriously affect the lives and fortunes of over 10,000 doctors in the State of Illinois it is necessary to examine somewhat into its origin, progress and its adaptability to medical work.

Such investigation is required partly by reason of the deep interest aroused in the various experiments now in operation but even more to define clearly the attitude of Organized Medicine.

Zealous advocates of the idea have created and spread the erroneous impression that medical men are opposed to all plans for Group Hospitalization. The truth is that no serious objections have been made by physicians to properly organized groups which have such medical representation in the management as to assure the exclusion of features hostile to the welfare of the people and to the proper practice of medicine. Indeed the groups which have achieved the most success are those that have this cooperation.

The origin of the venture must be sought in the widely discussed majority report of the Committee on the Cost of Medical Care (1930). From the publicity given to this sophistical document and the advocacy of its ill-considered pretensions by Social Theorists, it was borne in upon commercial promoters that medical service and hospital care might be organized, developed and exploited for profit.

Further examination however revealed that the execution of such plans would bring the incorporators under the control of the Insurance Commissioners of the several states. To avoid this unwelcome supervision the promoters assumed that agreements for medical and hospital attention were nothing more than contracts for service although the methods of organization, the marketing of contracts, the exclusions of benefits, the control and the underlying principle of spreading the financial load, were all borrowed from the insurance field which would obviously demand their classification among the insurance contracts.

That such inclusion was fundamentally correct and that the contracts would be placed either voluntarily or otherwise under the supervision of the State Insurance Commissions is apparent from the answers to Leland's questionnaire. In this summary twenty-one State Commissioners replied that the interpretation was valid and such contracts would automatically fall under the insurance law.

The common principle at the base of these decisions was, in brief, that the groups concerned assumed common risks and shared the loss. In other words Group Hospitalization must be regarded as an embryonic form of Health Insurance.

The only exceptions admitted were those where the contracts were entered into by individual hospitals with open staffs, or by fraternal, benevolent or religious associations which could be operated in reality as "not for profit" and with commercial promoters relegated to obscurity or exclusion. In these cases the agreement is regarded as a contract for service. That the Illinois Legislature passed a permissive act does not alter the intrinsic insurance relationship.

With this questionable foundation the business took root in various places and in various forms wherein legal action was improbable or delayed by uncertainty.

Meanwhile, from the medical standpoint, some Group Hospitalization plans are suspiciously unethical. Where a doctor or layman, group or corporation, contracts to furnish either hospitalization or medical care or both for definite periods of time at an agreed rate, the contractor is either practicing medicine unethically in his own person, or he is not practicing but acting as an intermediary between the real practitioner and his patient. Both are indefensible since for success in either of these procedures a business solicitor, or publicity agent with definite rewards for "acquisitions" of business is a necessity and the process from its inception violates Secs. 2 and 4, Art. 6, of the Code. Such actions either reduce compensation to points lower than adequate service permits, and to unfair competition with other medical men, or it puts medical service under lay control, or corporate management, or both with all the evils of solicitation, sensational publicity and freedom from professional restraint.

Neither, in this case, does the fact that Group

Hospitalization is already in operation here and there diminish nor abrogate its sometime unethical character any more than the existence of the Public Health Institute, a "not for profit" corporation, and similar illegal institutions absolve them from professional disrepute. Moreover such organizations are for the most part superfluous and impose a new complication upon a people and a profession already overburdened with bureaus. Leland believes that by observing the essential safeguards of the insurance laws these organizations would be enabled to provide better for the safety of the insured and better for the preservation of medical reputations which are imperiled by injudicious and precipitant endorsements of unworthy plans.

For the patient the outlook is somewhat more satisfactory than in Health Insurance plans as generally proposed since the bureaus are smaller and more sensitive to financial loss but here also the danger of malingering cannot be eliminated for a man who has paid a certain sum for service or protection is always eager to secure a tangible or an intangible return.

From the standpoint of the hospital the proposition is not undesirable since it promises to fill some empty beds and diminish shortages by the grace of being a preferred creditor with certainty of payment. In this connection caution must be used in the selection of hospitals lest undesirable institutions be endowed with new life or the doctor be exploited by the direction, supervision and marketing of medical service through the hospital authorities as exemplified by the methods in vogue at the Chicago University hospitals.

"The importance of this movement," says Leland, "has been sensationally overstated." Was it through partizanship or promotional reasons? "Out of 144 organizations which were, at one time or another in course of formation, only twenty-three exist today." Leland criticises also the unmethodical management which is commonly present and especially the fact that no records are kept of the experiment whereon actuarial conclusions could be based, as well as the feeble, unbusinesslike attempts at financial statement.

Where they do not fail and disappear, the trend of these enterprises is, inevitably, toward the setting up of a surreptitious insurance business which makes for commercial expansion, competition, increase of commercial influence, merger

with legitimate insurance concerns, or finally, to become the nucleus for a wider expansion of Health Insurance or State Medicine. In all these terminations the County Society loses regulative control altogether over ethical and medical standards.

The nature of the contract therefore and the type of administrative control are extremely important to the medical profession. Medical men should vigorously oppose any proposition which destroys the basic features of medical service or permits hospitals, even by indirection, to enter the practice of medicine. (Leland)

In order to meet intelligently the exigencies of the local situation a committee was appointed by the Chicago Medical Society last Spring to study the question. In June a report was presented to the Council which embodied certain principles which the Committee felt might preserve the ethics of practice and the independence of the doctor under the conditions imposed by the experiment.

These principles were fundamental in character and required the proponents of Group Hospitalization to so organize as to—

1. Preclude the possibility of hospitals practicing medicine and from exploiting the services of physicians.
2. Prevent the underbidding of hospitals.
3. Recognize the A. M. A. and A. C. S. standards as the basis for hospital membership with such modifications as the Chicago Medical Society (or the county society) may from time to time officially approve.
4. Exclude no hospital except for reasons set forth in clause three.
5. Refer all matters of medical administration and medical policy to the Chicago Medical Society (or County Society) whose decision in such cases shall be final and binding both on the Group Hospital management and on the member hospitals.
6. Keep such records of admission and assignment of patients as the Medical Society of the County may require and to keep them open for inspection by properly appointed officials of that body.

The Committee believes that these principles should control the relationship between the medical profession and the Hospital Groups.

Furthermore, in every instance where the plan is legitimately organized on a "not for profit,"

and therefore presumably on a wholly altruistic basis, reasonable protection should be assured against diversion of funds to sales agencies, publicity men, or profit seeking corporations. The enterprise should concern itself solely with hospital care to avoid entanglement in contract practice. Logically also, the control should be vested in the people who can render the service, that is, the doctors and the hospitals.

With single hospitals, or small communities, the project may succeed but if wider and more ambitious expansion is undertaken the plan should embrace all approved hospitals, and their staffs should be open to all approved medical men for otherwise a rift would be created and the hospital field opened to competition by rival groups, bidding and underbidding for "acquisitions" or in membership drives which ultimately would bring ruin to the hospitals as well as the competing groups.

The situation is problematical, the experiment unproven as yet and, in spite of the principles laid down, some cases admit so great a possibility of commercial domination that not only the plan but details of its operation, should be most carefully studied before receiving a professional endorsement.

In fact, medical men should refuse official recognition of such insufficiently tested schemes, until all the principles laid down have been complied with and the County Society has so authoritative a voice in the management that it may watch sedulously the development and tendencies of the protean forms which this movement may assume.

CHEST ROENTGENOGRAPHY—NEW STANDARDS AND IMPROVED TECHNIQUES

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The chest roentgenogram is now generally considered to be the most important single factor in the diagnosis of tuberculosis of the bronchopulmonary tract.¹ For the diagnosis of non-tuberculous lesions within the thorax a major diagnostic role must also be assigned to the chest film. This is especially true in bronchopneumonia where the physical signs are

usually lacking or inconclusive.² Until recent years the use of the chest radiograph has been restricted, more or less, to that of a "laboratory aid" for the corroboration of the presence of lesions of gross character and extent. Thus, the quality of the film was seldom challenged for consideration of possible enhancement of its diagnostic usefulness. Brown³ has noted that suits have not infrequently been brought on the basis of such films that no interpretation of pathologic conditions should be made of them. (See Figure 1). Weyl and Warren⁴ correctly insist that a fairly satisfactory film is not possible with apparatus of less than 90 kvp. and 100 milliamperes, with exposure time slower than 1/10 of a second and distance shorter than 48-50 inches. That a general adoption of a basic standard of technique is necessary needs only the reflective observation that chest radiographs from different laboratories lack comparability. (See Figure 2).

Our present interest in the improved roentgenogram has, to some extent, followed survey studies among large groups of apparently healthy individuals wherein it was repeatedly observed that films of good quality could detect tuberculosis in its earliest manifestations, and, in many instances, months or even years before physical signs and sputum became aids in the diagnosis. McPhedran⁵ cites only a single instance in which the lesion was overlooked on first viewing and so emphasizing the potential diagnostic values accruing to the improved quality chest film. The present diagnostic standards, National Tuberculosis Association⁶, maintain that definite parenchymal changes are to be seen in nearly all instances of proved tuberculosis whereas absence of such changes demands other proof of the existence of the disease.

Sargent⁷ considers that "A radiological examination is an autopsy of the living." It is necessary, however, as Rigler⁸ has put it, that "the films should be technically almost perfect." Such films are definable⁹ as those in which there is sharpness and comparability of the shadows of bronchovascular markings, visualized with contrast, from apex to base and from hilum (including paracardiac areas) to the lateral chest wall. These requirements are perhaps best satis-

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fied, with present available equipment, using the following technique:¹⁰

Calibration (Patient)13-B
 X-ray tube voltage.....60.2 kvp.
 Focal spot-film distance.....1.83 meters
 X-ray tube current.....300 ma.
 Exposure time1/10 sec.
 Milliampere-seconds30 ma-sec.

For the overnourished individual a proper de-

results of short exposures made accurate through use of the impulse timer. On the other hand, it is not felt that milliamperages above the 300 to 500 range increase the diagnostic usefulness of the film sufficiently to warrant the expenditure necessary to provide for such increase of capacity. With the reduction in the effective focal spot size, made possible with the advent of



Fig. 1. This film was actually submitted for interpretation, though utterly lacking in detail, density, and contrast.



Fig. 2. There are to be found many variations of film quality within the range between this film and that represented by Fig. 1.

gree of contrast may be preserved through increase of the tube current factor to 500 milliamperes. The technique given avoids the dis-

the rotating anode type of tube, there should result a definite improvement of detail in films taken with moderately high milliamperage tech-

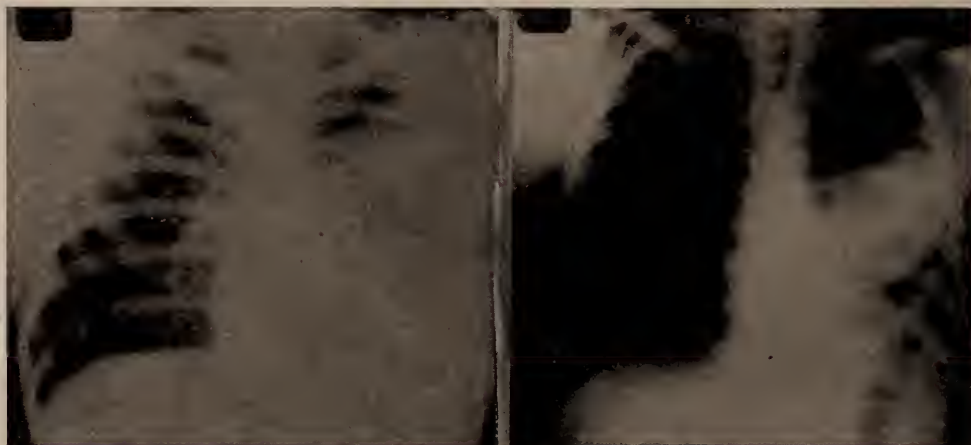


Fig. 3. A diagnostic pleurocentesis yielded straw-colored fibrinous exudate. Over-penetration exposure, together with high speed chest Bucky diaphragm, of-

fered a diagnosis of pulmonary abscess, located beneath the fluid density.

tortion of shorter target-film distances as well as providing sharpness and reproduceability—

niques. Condenser-discharge apparatus is manufactured with a single condenser, whereas, sev-

eral capacitances are required for optimum chest films.¹¹

For the penetration of pleural thickening (See Figure 3) or dense tissue masses such as follow surgical collapse of the chest wall, the use of the High Speed Chest Bucky Diaphragm adds contrast which is usually lacking with ordinary overpenetration techniques.

Several non-technical factors affect the diagnostic usefulness of the chest film. The scapulae, if allowed to remain in normal position, may,

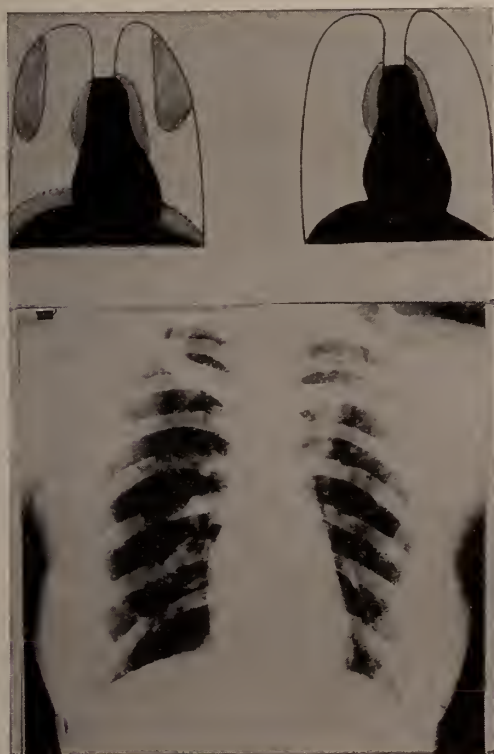


Fig. 4. The diagrams show how much parenchymal tissue may be overshadowed by failure to throw the scapulae out of normal position, and lack of fullest possible inspiration which prevents complete diaphragmatic descent. The scapulae on the film produce veiled densities in the middle and peripheral zones as low as the 6th and 7th posterior ribs.

on the single film, prevent proper visualization of the peripheral zones of the parenchymal fields. Unless the fullest possible inspiration precedes the exposure, the descent of the diaphragm will be incomplete and a considerable area of basal pulmonary tissue will be obscured. Only by rotation¹² of the chest may the paracardiac areas be explored, and occasionally a cavity finds location within the hilum shadow area. (See Figure 4.) The calibration of the

patient remains somewhat of an estimation procedure. However, carefully kept calibration records will provide data on which may be based a more accurate estimate of the kilo-voltage requirements. The patient should be measured with a pelvimeter and the maximum chest depth noted in centimeters. Weyl and Warren¹³ suggest that chest wall soft tissue characteristics be designated as "A," for the undernourished; "B," average; "C," muscular; and "D," extremely fat and muscular. We have found it of value to further classify chest types as A, AB, B, BC, C, CD, and D. It is unnecessary to point out that unless precision methods are practiced in the darkroom and the best available film secured for processing, all attempts to improve the quality of the chest roentgenogram are rendered almost valueless.

In most cases a single x-ray film is adequate to demonstrate the lesions of advanced tuberculosis. However, the stereogram offers better opportunity for more critical examination of the finer structures to the end that visualization is had of relatively small abnormal densities, characteristic of the earlier forms of tuberculosis.¹⁴

Serial studies accurately depict such events as the development of bronchogenic spread, new contralateral involvements, etc., and are of importance both diagnostically and from the standpoint of prognosis.⁶

The tendency to overinterpret the chest film exists largely because of the coarsening of the normal bronchovascular markings due to either a broad focal spot or to lack of exposure speed.^{8, 15} The proper interpretation of the chest film is, of course, of final importance.¹⁶

SUMMARY

1. Lesions of gross character and extent may be recognized in the chest roentgenogram of indifferent quality. For a fairly satisfactory film, however, minimum standards of technique and apparatus have been set which, if generally adopted, would allow for some degree of comparability between laboratories.

2. Improved chest films result from a technique involving somewhat higher milliamperages and without any sacrifice of detail if rotating anode type of tube is used.

3. The High Speed Chest Bucky Diaphragm, by adding contrast to the exposure made for the

purpose of penetrating such dense tissues as thickened pleura, etc., may be expected to find more general use, especially in hospitals and sanatoriums.

4. Calibration of the patient, rotation positions, fullest inspiration and avoidance of scapula shadows are factors which influence the diagnostic value of the chest radiograph.

DISCUSSION

Dr. Roswell T. Pettit, Ottawa: I am very much interested in this need for standards in chest radiography. As perhaps most of you know, I was the medical director of the Tuberculosis Sanatorium at Ottawa for a number of years before I took up radiology. With that background of clinical work in tuberculosis, together with radiology—and a large share of my work happens to be radiology of the chest—there has been brought home to me the miserable state of affairs in roentgenology of the chest and the importance of the proper type of films. This matter was of such great importance that the National Tuberculosis Association saw fit to make a grant to the Moore School of Electric Engineering, of the University of Pennsylvania, and the Moore X-ray School Laboratory was founded in 1929 for the purpose of trying to improve the standards of roentgenology. This work was in the hands of Mr. Weyl and Mr. Warren, two electrical engineers who published an article in the April issue of the *American Journal of Roentgenology*.

In a survey of twenty-nine hospitals the amount of density on the films as measured with the densimeter (photo-electric cell) varied as much as 200%. They also found by their study of optics that films that vary more than 10% are not comparable. When you have roentgenologists, as represented by some 29 hospitals, that vary as much as 200% in their ideas of proper density optically, something ought to be done about it.

This Moore School X-ray Laboratory is a research institute endorsed by the National Tuberculosis Association and we should adopt the standards laid down by this school, at least the minimum standards. This does not mean we are going to have to stop our progress but there are certain minimum standards that must be met. In the General Electric Company's catalog is a reproduction of a radiograph of a chest taken in three seconds at thirty-two inches. You can imagine the distortion. You have not a comparable amount of radiation over the surface of that film and yet manufacturers are advocating the taking of such films, and those films are going to have to go into court. Any bright lawyer who knew anything about x-ray technic could have evidence based on radiographs of that sort thrown out as incompetent medical evidence.

I know of one case that involved a suit of \$17,000. Radiographs were presented by both sides. One was so pale you could not see anything but the hilus shadows and bronchial tree and the other so black you could not see anything but the ribs and heart and yet films like that were used in settling an important law suit.

In 1922, Freiburg, Graf and Kruppele demonstrated quite clearly that they were able to differentiate between the fibrous or productive type of tuberculosis from the exudative type. On the basis of the roentgenogram they could make a prognosis as to whether a man could get well or not. In a series of cases presented before the Chicago Roentgenological Society I was able to prognosticate successfully in 85% of the cases using their method.

With improved technic, improved methods, I believe there are a number of cases where careful study of the edges of these densities in the roentgenogram will result in improvement of our knowledge. I mean particularly differentiation of the different types of tuberculosis, and differentiating tuberculosis from other changes in the lungs, such as pneumoconiosis.

Weyl and Warern have published a book on "Apparatus and Technic in Radiography of the Chest." The publisher is C. C. Thomas of Springfield. It covers the results of eight or ten years of intense research in this field and gives the basis for the necessary standards of chest roentgenography. Let me recommend this book to you. We certainly need somebody to tell us what constitutes a proper x-ray film of the chest.

Dr. Van Hazel: I feel this paper is exceedingly important, not only to the clinician who must take care of these patients but also valuable to the patient himself. Certainly if we can pick up earlier lesions in tuberculosis, there is going to be less call for the more radical procedure of chest surgery to control the disease. It has been my privilege to see films several times taken by this technique and I certainly can attest to the value of studying these serially as compared to the patient with tuberculosis who has been more unfortunate having had films taken probably first by one laboratory, later by another. One cannot immediately decide whether surgical procedure is indicated from the roentgenogram in these cases so if this method can be adopted it certainly will be worth while.

I am not qualified to talk about the technical part of the x-ray and the taking of films. As a clinician we are called upon in thoracic surgery to take care of these patients and you can render more service by this type of film. You have developed the roentgenogram of the chest and are responsible for the increasing value of its use. I hope it will go on increasing its value and by these methods it can.

Within the past six weeks, I saw a patient who had an x-ray film following pneumonia which showed a definite localized collection of fluid in the mid-axillary portion of the left side. The patient was extremely ill. On the right side there was also involvement but the roentgenogram did not show this. One or two days later it showed definite involvement. The accumulation of fluid was pus which was aspirated and 50 c.c. of pus removed. The patient went on and got well. He did not get well from aspirating that pus. I feel confident the trouble with that patient was the process in the right side the poor film had not shown. One might have undertaken some radical procedure that

might have changed the outcome. So its value lies not only in tuberculosis but in other diseases as well.

In the thoracoplasty patient sometimes we get atelectasis or certainly a cloudiness of the pleura or some edema which might obscure the lung field on the side operated on. It has been our procedure in these cases to make not only the plain film which shows the parenchyma but also to take an over-exposure picture which will show the degree of collapse by showing the cut end of the ribs which frequently are not shown in the ordinary film. Sometimes it is very revealing to see just what the nature is in these dense areas and it may guide one tremendously to the benefit of the patient.

I believe we as clinicians may be at fault sometimes in not getting as much information out of the chest films as we would desire. I mean by that to sign a slip and say we want an x-ray of the chest is not fair to the roentgenologist. We must cooperate with the roentgenologist, tell what we are looking for and he will have a much better idea in following the proper procedure to obtain that information. Many times I have been rewarded by expressing to the roentgenologist just what we are looking for.

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DO YOU KNOW?

Cancer is more common in women than in men.

Rats begin to breed when only three or four months old.

Ice cream made for diabetic patients is made largely of cream and eggs with saccharine to sweeten it.

NOTES ON PLASTIC SURGERY OF THE ORBIT

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At the last meeting of the American Academy of Ophthalmology and Otolaryngology in Cincinnati, Dr. John M. Wheeler, in one of his lectures, made the significant statement that plastic surgery of the eye belonged to the ophthalmologist who was more familiar with the anatomy and physiology of this region than the general surgeon. The writer came to realize the truth of this axiom early in his ophthalmic career when a number of cases presented themselves to our eye clinic, at the University of Illinois, with deformities about the eye and orbit. In some of these cases excellent plastic work on face and forehead had previously been performed by well known general plastic surgeons, but distortions of the lids and socket had remained, causing considerable dysfunction. We proceeded to correct these defects according to standard technique and the percentage of our successful results grew in proportion to our increased experience and interest in this work. I, therefore, feel that any ophthalmic surgeon of moderate skill can perfect the technique of plastic surgery in his own field, provided he displays a keen interest in it.

Neither time nor space will permit a full discussion of this subject, I shall, therefore, merely endeavor to outline the following fundamental principles, which every beginner in this field must familiarize himself with:

A. *Preoperative Procedures.* 1. The primary factor causing the deformity, be it a burn, injury, epithelioma, lupus, etc., must be completely healed and free from all traces of activity. It is best to get the opinion of a competent dermatologist as to the advisability of attempting plastic work in a given case.

2. All infections must be cleared away before any surgery is attempted, for if the op-

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erative field harbors even the slightest infection the graft will not "take."

3. A thorough physical examination of the patient to determine the presence or absence of constitutional disease or dyscrasia must be made prior to operation.

4. The skin about the eye and face on the side of the operation must be prepared for several days as suggested by Sheehan.¹ This consists of steaming the face with hot towels for one-half hour three times a day, followed by a thorough cleansing with soap and water.

5. Immediately before the operation the skin is again scrubbed with green soap and water, dried with ether, then followed by alcohol and, finally, coated with mercurochrome or neutral acriflavine.

B. *Operative Technique.* 1. After the skin incision, which is made according to the type of the operation, all adhesions and scars must be severed or excised, so as to permit the tissues to fall into their natural positions. Remaining adhesive bands not only tend to perpetuate the deformity but also act as a source for further cicatricial tissue formation.

2. The bed prepared for the reception of a graft must be put on a stretch and so held for some time in order to bring about a minimum amount of post operative contraction. This can be accomplished in two ways. One by the method of Wheeler,² which consists of roughening the margins of the upper and lower lids in three corresponding places for a distance of four mm., inserting double-armed silk sutures through the entire thickness of the lids close to the raw margins, and tying them over beads. The sutures are removed after six to eight days, by which time adhesive bands will have formed in the roughened areas holding the lids closely together. In some cases it is necessary to cause adhesions through the entire length of the lid rims. The lids are held together for six to eight weeks in order to prevent contraction. At the end of that time the adhesions are severed and the raw areas touched up with silver nitrate. The second method consists of placing three or more retention sutures through the lid margin and, after having drawn the lids up to a maximum, fastening them to the face or forehead, as the case may be, by adhesive plaster. Experience has

taught us that in cases of large defects the latter method is more satisfactory as we are then better able to apply larger grafts and so allow for a maximum amount of future shrinkage.

3. In a good many cases a certain amount of the exposed area can be covered by undermining and advancing the adjacent healthy skin thus avoiding the necessity for using large grafts from other parts of the body.

4. The exposed raw area is then covered by a full thickness skin graft. The best source for grafting eye lids is obtained from the opposite lid of the same eye or the opposite eye. It is surprising how much skin can be taken away from a normal lid without impairing its function. The next best source is the skin from behind the ear, which resembles the integument of the lid more closely than that of any other part of the body. Lastly, skin can be obtained from the inner surface of the arm or thigh, or from the abdomen. If a lashline is desired, skin may be taken from the pubic region, using the upper border of the pubic hair for the lid margin. Regardless of the source, the skin should be free from subcutaneous tissue and, particularly, from fat.

5. The graft must be handled as little as possible and with the greatest gentleness. Of late we have followed Sheehan's³ suggestion which consists of placing four anchor sutures, one in each side of the graft, before it is removed. These enable the assistant to fix the skin, apply tension when necessary, and transfer the graft to its new bed without undue delay or unnecessary handling.

6. The graft is either sutured to the adjacent skin or, else, simply placed over the bed and held there by pressure; the former method, however, is most commonly used.

7. After the graft is properly placed, a layer of vaselized, perforated gutta-percha is placed directly over it. This is covered by wads of cotton or gauze and fastened by adhesive. More loose gauze is placed over this dressing and a tight bandage is applied over the eye and the corresponding side of the face.

8. Considerable pressure must be applied over the graft for the first six to eight days, so that it is in contact with the underlying tissues throughout its extent, thus preventing the

formation of organized connective tissue between graft and underlying bed.

9. When dealing with a shrunken eye socket, the graft is wrapped around a dental compound mold, raw surface outside, inserted into the socket, and the lids sutured over it.

C. The Postoperative Treatment. The first dressing is done on the fifth day. The gauze and the gutta-percha are gently removed, the wound cleansed and a dressing similar to the first one applied. Thereafter the wound is dressed every other day, the sutures are removed on the sixth or eighth day and the dressings entirely dispensed with at the end of ten days or two weeks.

The following cases, briefly described, will illustrate the most common conditions encountered in our work, the technique used, and the results obtained.

Case 1. Cicatricial ectropion. M. I., female, aged 40. Marked ectropion of the central portion of the left lower lid following excision of tumor two years previously. The dermatologist was of the opinion that the tumor had been either an epithelioma or a blastomycosis. After freeing the skin from underlying tissues and excising all scar tissue, the lid was put on a stretch by two silk sutures, fastened to the forehead, and the exposed raw area covered by a free Wolff graft taken from the inner aspect of the left arm. The graft took in toto and an excellent result obtained as shown in Figure 1.



Figure 1. Cicatricial ectropion following removal of tumor.

A. Before operation. (Top)
B. After operation. (Bottom)

Case 2. Cicatricial ectropion due to burns. J. W., aged 6 years, sustained burns of face and forehead by falling against steam pipe at age of 4 months. Numerous plastic operations had been performed by a well-known surgeon of St. Louis, leaving extensive scars on right cheek and forehead and a marked ectropion of the nasal two-thirds of the lower lid and nasal

one-half of upper lid. Lid plastics were performed first on the lower lid and one month later on the upper lid using the same technique as described in Case 1, the grafts in both instances obtained from the thigh. The result was fairly good, but the lid closure was still imperfect in nasal one-third. The patient was not seen until five years later when a third plastic was done on the upper lid, resulting in good closure as shown in Figure 2.



Figure 2. Cicatricial ectropion due to burn.

A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. After operation—eyes closed. (Bottom)

Case 3. Congenital coloboma of right upper lid, keratosis of right cornea, and right anterior polar cataract. C. M., 8 years of age, presented herself with a congenital triangular defect in the center of the right upper lid, the base, one-half inch wide, towards lid margin. Trichiasis was present. A skin grafting operation was performed in a manner similar to the one



Figure 3. Congenital coloboma of right upper lid.

A. Before operation. (Top)
B. After operation. (Bottom)

described above, leaving only a very small central notch at the lid margin, with good closure, as seen in Figure 3.

Case 4. Congenital pigmented nevus of lids. W. K., female, aged 17 years, presented herself with an unsightly pigmented, mulberry-like nevus, involving both right lids and extending upwards to temporal border of right brow and downwards over cheek, covering a wedge-shaped area, six by four cm. in dimension. The dermatologist who referred her to us, had advised against radium but thought surgery might be of some benefit. She was presented before the Chicago Ophthalmological Society where considerable difference of opinion was expressed as to the advisability of a plastic operation. We felt, however, that surgery would, undoubtedly, improve the young lady's appearance and, accordingly, proceeded to do the work in several stages. In May, 1935, the skin of the entire lower lid and portion of cheek involved was resected and replaced by a full thickness Wolff graft taken from the thigh. The graft took only partly, leaving a few raw areas which we covered by several pieces of Thiersch graft one month later. The lower lid and cheek healed up well leaving only a moderate ectropion at outer canthus. Two months later the skin of the upper lid was resected and replaced by a large graft taken from the lower abdomen and using the public hair-line for a lash-line. This graft took en masse and healed up within a few days. However, on account of later shrinkage of the upper lid and the ectropion of the lower lid, there was imperfect closure at the outer one-half of the palpebral fissure. A third skin grafting operation was performed

four months later utilizing the skin from the left upper lid, with the result that only a slight ectropion is still present at the outer canthus, as shown in Figure 4. This we expect to correct in the near future.

Case 5. Shrunken eye socket. M. H., 31 years of age, had left out the prosthesis from her right eye for a period of six months while confined to bed by illness. The socket shrunk so that no prosthesis could be inserted. Several operations consisting of canthoplasty, enlargement of the socket through incisions and insertions of dental molding compound failed, as shrinkage of the underlying tissues invariably extruded the mold after a few weeks. On August 15, 1935, the socket was enlarged and a full thickness Wolff graft, taken from the thigh and wrapped around a dental compound mold, was inserted into it. The lids were sutured over the mold. The graft took well as shown in Figure 5 and the patient has been able to wear a prosthesis since.



Figure 4. Congenital pigmented nevus of the lids.
A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. After last operation—eyes closed. (Bottom)



Figure 5. Shrunken eye socket.
A. View of socket after operation. (Top)
B. Same with prosthesis inserted. (Bottom)

Case 6. Retrobulbar tumor, exophthalmos and divergent strabismus. M. L., aged 20 years, was admitted to our clinic in September, 1933, with a marked proptosis and displacement upwards and outwards of the left eye, the divergence amounting to 50 degrees. A soft mass was palpable in the nasal portion of the orbit. She stated the left eye had begun to protrude at the age of 7, progressing during the course of the next six years and remaining stationary since. Her left vision was 6/200 and there was partial atrophy of the optic nerve. X-ray examinations of the orbit and sinuses were negative. Through a semilunar incision in the nasal conjunctiva and Tenon's capsule a two cm. dermoid cyst was removed from the muscle cone. Six weeks later, a tenotomy of the external rectus and a resection of the internal rectus was performed. At the same time a small symblepharon which had resulted from the first operation was corrected by undermining and advancing the adjacent conjunctiva. This left a residual divergence of 30 degrees and an upward deviation of 20 degrees. In September of 1934 a tucking of the inferior rectus and a four mm. resection of the

internal rectus was performed with the result as shown in the accompanying photo.



Figure 6. Retrobulbar tumor, exophthalmos and divergent strabismus.

A. Before operation. (Top)
B. After last operation. (Bottom)

Case 7. Entropion, symblepharon and convergent squint. D. N., male, aged 5 years, was admitted to the hospital in January, 1936, with a complete adhesion between the palpebral conjunctiva of the lower lid and the ocular conjunctiva, thus obliterating the fornix. The lower lid was markedly inverted, the lower one-half of the cornea covered by a dense opacity and the left eye converged 15 degrees. All these had resulted from a lye burn three months previous to admission. Under general anesthesia a one cm. incision in the conjunctiva, seven mm. below limbus, was made. All adhesions severed and some excised and the defect covered by a mucous graft obtained from the lower lip. The graft took in toto, leaving a fairly deep fornix, but the entropion still persisted necessitating a second operation. This was performed two months later, by excising some of the remaining scars and drawing the lid down by retention sutures which were fixed to the cheek by adhesive plaster. The result is shown in Figure 6. The convergent squint will be dealt with later.

Case 8. Coloboma of the left upper lid. Keratitis



Figure 7. Entropion, symblepharon and convergent squint.

A. Before operation. (Top)
B. After operation. (Bottom)

e lagophthalmos. F. N., male, aged 32 years, consulted me on account of almost a total absence of the left upper lid which he attributed to a neglected birth injury. He stated his left eye had always been irritated and left vision poor but that of late his eye has been painful and more injected. Findings: The upper lid was practically absent in the temporal three-fourths, being drawn up to the very brow and exposing several bands of angry-looking conjunctiva which were adherent to the everted skin. The lower lid was hypertrophied and drawn up to cover part of the cornea. Lid closure was impossible even with the strongest effort. The upper two-fifths of the cornea were ulcerated and keratosed and the left vision equaled 8/200.

At operation, after having freed and excised all adhesions and scars, the atrophic musculature of the lid together with the conjunctiva were brought down and lid closure performed by the Wheeler method. The skin defect was covered by a large graft taken from the back of the left ear. The graft took in toto and the lids remained closed for four to five weeks when the adhesive bands gradually thinned out and were unable to maintain closure. In the course of the next two months further shrinkage of upper lid took place, exposing the upper part of the cornea, although forcible closure could be obtained. Two more plastics were performed, the last one consisting of resetting the outer canthus, shortening of the lower lid and utilizing the removed skin as a graft for the upper lid. The result may be considered fairly good and complete closure of the palpebral fissure is present at shown in Figure 8.

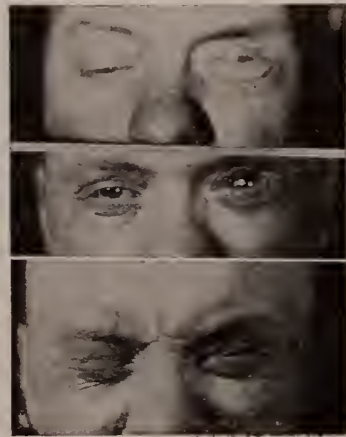


Figure 8. Coloboma of left upper lid.

A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. Same—eyes closed. (Bottom)

SUMMARY AND CONCLUSIONS

1. The principals of plastic surgery, as related to the orbit, are briefly discussed.
2. Operations for cicatricial ectropion, entropion, symblepharon, exophthalmos, colobomata and nevi of the lids and shrunken eye sockets are briefly described and illustrated.

3. It is felt that plastic surgery of the eye best be done by the ophthalmologist who is familiar with the anatomy and physiology of the region and who can develop the technique by a little practice and interest in this type of work.

4. Patients presenting deformities about the eye should be encouraged to undergo plastic operations with the assurance that, if not completely cured, at least a great deal of improvement can be accomplished.

DISCUSSION

Dr. H. L. Ford, Champaign: I would like to ask Dr. Folk a question. In fixing this full thickness graft, do you use sutures only at the periphery, or do you also use central black silk sutures? Do you feel it necessary to make multiple small perforations to aid in the exudation of serum?

Dr. Harry Woodruff, Joliet: Dr. Folk made one statement that I think should be qualified, that is, that any amount of skin could be taken from lid to repair another.

The fact that three men were scheduled to discuss this paper, two of whom are not here, and Dr. Deal says he has not had experience in this kind of work, shows that the work is so infrequent that the average ophthalmologist has difficulty in acquiring the experience required to do the work. Outside of a few large clinics you do not get many cases. I remember Dr. Hotz of Chicago was considered a pioneer ophthalmologist in skin grafts, using exactly the same method Dr. Folk has described in stretching the skin by suturing the lid to the cheek or forehead, to put as large a graft as possible into the area. I hoped that Dr. Folk might say something about cases in which, in addition to the skin destroyed, you have a destruction of the mucous membrane also. That is where you have a major job, one that requires a real surgeon, and perhaps you may have to go to a general surgeon. Certainly, some operation must be performed by which you can cover one surface by mucous membrane if you can get it. I think Blair of St. Louis has demonstrated some wonderful work in plastic surgery. He is a general surgeon, but I think any eye man can learn from him how to do these operations. The skin can be raised on the forehead sufficiently to get a mucous graft on the inner surface of the flap, and after that has adhered the entire flap can be loosened, leaving only a pedicle, and swinging that into position so as to produce a complete lid. I think with Dr. Folk it is a very fascinating branch of surgery.

Dr. Hiram J. Smith, Chicago: We used to see many lid accidents from broken glass. Fortunately with the use of non-shatterable glass they are less frequent. I have had a lot of experience with mucous grafts from the mouth to take the place of the palpebral conjunctiva. At first one is somewhat disappointed in seeing that it is thicker than desired, but the mucous membrane gradually takes on the function and appearance of the conjunctiva. I have seen Dr. Folk's work

at the University of Illinois, and I congratulate him on having the courage to enter this field.

Dr. M. L. Folk, Chicago (closing): I want to express my thanks for this excellent discussion.

In reply to Dr. Ford's question, we use four sutures applied to the graft before it is removed, suturing it at each side. Then we use silk sutures about 3 or 4 mm. apart. Wheeler says if they are too close together adhesions form more readily and healing is more prompt. As to perforating the skin to allow discharge of serum, I have never found it necessary.

I did not mean, Dr. Woodruff, that the entire skin could be removed from the lid. I meant that one should not be timid about using that skin. You cannot take 5 or 6 cm. but you can take 1 or 2 cm. without any interference with function. We have had no case, except the last mentioned, where we had to replace the whole conjunctiva and lid. You can take the skin first if you have any muscle, or pull up some muscle from above or below, and take some mucous membrane from the lip. One can take a large-sized graft from the lip and it heals up very nicely without any trouble after the first few days.

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PELVIC ENDOMETRIOSIS

W. A. MALCOLM, M. D.

PEORIA, ILL.

Endometriosis (Endometrioma) is an abnormal growth of endometrial tissue arising in or near the female pelvis. The endometrium-like tissue is made up of glandular structures with typical stroma and round cell infiltration. This tumor menstruates, enlarges slowly, invades tissue progressively, is curable and not malignant, and after the menopause or castration it retrogresses and atrophies. This is the only tumor that has a definite cure by removal of ovarian hormone.

The history of this condition dates back to about 1860 when Rokitansky described it as a definite pathological entity for the first time. Then, 1893-96, Von Recklinghausen expounded the theory that it was due to Wolffian rests. In 1896, Cullen made first mention of adenomyoma of round ligament and has added considerable knowledge to this subject. In 1899 Russell considered it due to Mullerian duct remnants and

described it first in the ovary. By 1920 Cullen had finished an extensive amount of work on adenomyomata, to disprove some of the above findings; but in 1921 Sampson brought forth his implantation theory which has been the most accepted to date. Since that time much has been in our gynecological literature relative to this disease.

The implantation theory is that the epithelium escapes during menstruation through the fimbriated end of the tube and these regurgitated fragments lodge and implants grow. He proved that endometrial-like tissue in the ovary was not metaplastic. Sampson showed where the implants are relatively frequent whereas tumors of embryonic rests are rare. This development occurs during menstrual life and menstrual blood has been seen coming out of fimbriated end of tubes at the time of operation as well as found free in the tubes. Implants on the ovary are usually on the under or lateral surface of the ovary and associated with conditions favoring a back flow, such as retroversion or fibroids. Cron proved the viability of endometrium in vitro, while Jacobson, has produced similar lesions by autotransplantation.

The serosal theory by Meyer in 1919 assumes that any part of the pelvic peritoneum derived from celomic mesothelium is capable under certain circumstances of undergoing a metaplasia or reversion to Mullerian tissue—retaining its embryonal growth potentialities. This explains all the wide-spread lesions in the round ligament, umbilicus, rectovaginal septum, vulva, vagina and areas where it is difficult for the Sampson theory to explain.

Halban disproves both above theories and has done extensive work to prove his hypothesis of metastatic endometrium through lymph channels.

The pathology, like the symptoms, varies with the extent and location of the disease. Histologically, the lesions are made up of glands of columnar epithelium, sometimes with cilia, usually with a stroma and round cell infiltration about the glands. In lesions of uterine cornu, of peritoneum and of scar tissue, the stroma may be missing. In ovarian lesions the presence of endometrial-like glands may be reduced. King says paralutein cysts are different from endometriosis in that they have an epithelial lining

with a wavy fibrous tissue beneath that differs much from stroma. Most perplexing question is cornual lesions—endometrioma, endosalpingioma or salpingitis isthmica nodosum. Evidence of chronic inflammation about mucosa instead of stroma is indicative of the latter. Cysts with blood retention at time of operation may be paralutein, lutein, follicle and malignant cysts. The chocolate-like fluid, the adherence and induration of tissue, the small dark blue spots scattered on peritoneum and puckering of the lesions are characteristic. These “chocolate cysts” of the ovary vary from small spots on the surface to multiple sizes and deep cystic areas, and may take up all the structure of the ovary. They are lined with cuboidal epithelium and surrounded by stroma resembling endometrium. This tissue undergoes changes, as uterine endometrium, the discharge of blood and desquamated cells are retained in its cavity or may rupture through the capsule to the adjacent structures. The retention of blood in the cysts gives it the syrupy, tarry characteristics. This, when in contact with adjacent tissue gives firm multiple adhesions and a continuation of the condition at each succeeding menstrual period. It occurs in both ovaries in about 30% of the cases.

Symptoms are often associated with other abnormalities as malpositions and fibroids. A fibroid uterus complicated with pelvic adhesions and acquired dysmenorrhea with no history of a previous infection is especially suggestive. Cases usually occur in active sex life varying between 25-50 years, yet the disease may be found in women as young as 20 or past the menopause—the latter tumor being inactive. Sterility is a common associated factor present in 22% of George Van Smith's cases and 40% of Keen's cases, especially in endometriosis of the ovary, tubal cornu or wall, or will soon be acquired. Approximately 50% have menorrhagia or metrorrhagia. A scanty discharge of dark blood immediately before or after a normal, profuse, or prolonged period is a common occurrence. History of an acquired or increasing dysmenorrhea is present in over one half of the cases. Inter-menstrual discomfort or pelvic pain with an exaggeration of pain at the period time is characteristic. Midlumbar backache is frequent.

Adenomyoma (Adenomyosis) at first was thought to be a special form of uterine fibroid

with glandular elements. They resemble an ordinary fibroid except that they are not definitely circumscribed and can not be shelled out from adjacent tissue, not large and often occur in the posterior wall near the horns of the uterus. The structure is made up of fibromyomatous tissue and glands of low cuboidal epithelium simulating uterine mucosa, surrounded by uterine stroma-like tissue. Some authorities feel it is by invasion from uterine mucosa, penetrating the wall during menstruation through the venous circulation or lymph channels of the uterus as it often occurs in women who have had three or four children, or children close together.

It may occur at the uterine horns from ingrowths of uterine and tubal mucosa. Those that are found associated with gonorrhea and tuberculosis may be a true salpingitis isthmica nodosa. Symptoms are much like ordinary fibroids. Dysmenorrhea is more distinctive symptom.

In rectovaginal endometriosis, at first, small movable nodules behind cervix do not include the rectal mucosa but in the course of the disease the pelvis is converted into a board-like, nodular mass with increasing obstipation simulating cancer, syphilis or tuberculosis. The pain with defecation increases at each period. Bleeding from the rectum occurs in advanced cases. We may have a stricture of the rectum with the posterior vaginal wall involved.

In the round ligament a nodule appearing at the ring, painful and enlarging at the periods, increasing gradually in size and adherent to adjacent structures, is suspicious of endometriosis. Laparotomy scar or involvement of umbilicus shows a firm nodule tender and painful during period, adherent to skin and fascia, tending to grow progressively larger. Appendix, broad ligament and intestinal wall, when involved, are usually associated with other pathology. Vagina, vulva, omentum uncommonly have lesions associated with the usual symptoms of the disease.

If pregnancy occurs a definite decidual reaction is noted showing it is made up of definite endometrial tissue, and if pregnancy be followed by lactation, this usually postpones a recurrence.

Since Sampson brought the subject to the attention of the gynecologists, much has been written, and in spite of the clinical interest, the

preoperative diagnosis is rarely made. It should be suspected in all cases that give a history of acquired dysmenorrhea, abnormal bleeding, and pelvic pains which seem to be markedly exaggerated at the period time and have associated abnormal findings, lower temperature and lower leucocytosis than is anticipated with other factors in the case. While the diagnosis is most often made at laparotomy, a biopsy should always be taken, or all tissues sent to laboratory, for in many cases the pathologist makes the diagnosis. This materially adds to the after treatment and follow up on each case. It has to be differentiated from salpingitis, appendicitis, ectopic pregnancy, fibroids and in fact all pelvic conditions associated with bleeding and pelvic pain.

There is no stereotyped form of treatment; it depends on the extent of the disease, age and social condition of the patient. The end results of radical and conservative treatment are too little known to give any definite data. It is a disease of women in the childbearing period where conservative treatment is desired. Too often, radical measures must be adopted, so surgery is the treatment of choice. An effort is usually made to save enough ovarian tissue to retain the function of the genital organs and fertility. While treatment of nodulations and infiltrating implants on the broad ligament, bowels and rectovaginal septum, etc., are determined by the extent of the involvement. Easily accessible nodules may be excised; otherwise if difficult or extensive they are not disturbed and a bilateral oophorectomy and hysterectomy is performed. X-ray is resorted to in some instances with follow up treatment where conservative measures fail. A menopausal dose is given and technique varies with the operator. Radium is used as is x-ray in variable numbers of milligram hours as to location and type of the disease to be treated.

Conclusion:

1. We do not know why occurrence of endometriosis is so limited when there are constant opportunities for it to develop.
2. It is a disease essential to ovarian hormone.
3. Treatment varies with location and extent of the disease, but it should be conservative dur-

ing the child bearing period, followed by x-ray or radium in castration doses when necessary.

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DISCUSSION

Dr. D. D. Smith, Decatur, Ill.: We should congratulate Dr. Malcolm on his excellent paper on this difficult subject. We must agree with him that the diagnosis of endometriosis is very difficult, with the probable exception of two varieties, implants on the umbilicus and nodules on or behind the cervix. Even the diagnosis of the latter is very elusive.

As to the chocolate cysts, I think we find that endometriosis of the ovary and chocolate cysts with endometrial implants are of rather uncommon occurrence, while we do have many chocolate cysts of the ovary that are not of endometrial origin. We have corpus

luteum cysts of the ovary that attain large size, have some tarry, syrupy liquid in the cyst content, but usually find remnants of corpus luteum, also some old ovarian hemorrhages such as might occur after ovarian abscess. In none of these do we find endometrial implants.

Now as to the symptoms, we must differentiate between endometriosis and adenomyosis as they are two distinct conditions, unless we use the terms adenomyosis interna and externa. In endometriosis or adenomyosis externa according to Sampson's theory, we find the presence of implants which are probably from retrograde flow of menstrual blood from uterus into the peritoneal cavity. Adenomyosis externa is thought to be of embryonal origin and give no symptoms.

Conservative treatment, as Dr. Malcolm has said, is usually employed in young women in the child bearing age. If at operation implants are found, cauterization or excision are to be tried. I do not think we can truthfully say that all these implants disappear or can be cured by surgery or other methods, because occasionally we find an individual whose condition has gotten beyond the period of hormonal influence, where, according to treatment, we have removed the hormonal influence and destroyed the ovarian tissue, and there is a retrogression of the endometriosis. In one of my cases several years ago the patient had typical endometrial implants in the umbilicus, on the uterus, ovaries, bladder, omentum and intestines. A bilateral oophorectomy was performed and also removal of the uterus followed by two series of deep x-ray therapy. This individual continued as before and died within a year of general carcinomatosis. We had the tissue examined by a competent pathologist and no carcinomatous tissue was found. Of course, there was the possibility of some associated malignancy with the endometriosis. X-ray therapy may be employed in the treatment of endometriosis, but again, due to the fact that these patients are young women, we produce sterility and also throw them into a premature menopause.

Dr. Charles E. Galloway, Evanston, Ill.: This is a very good review of endometriosis. As to origin, Sampson's theory as to implantation has been proved experimentally. Meyer's theory of prozoplasia can be very easily demonstrated because we can see it under the microscope. Then, too, we find endometriosis in old pelvic infection more often than anywhere else. It is the general influence of the peritoneal cells taking on a glandular function which in turn transforms the connective tissue around it into cystogenic tissue, similar to that found in the endometrium. Halban's theory has never been proved because we never have found endometrial implants along lymphatic ducts. The Muellerian duct arrests theory is plausible because we find arrests in all parts of the body. The endometrial transplant theory, or the theory of Sampson, is very common especially after abortion and where the uterus is perforated. We do have these theories substantially backed up by microscopic examination with experimental evidence.

The other statement in the paper that I would like

to take exception to is that these tumors menstruate. I do not think they do. I do not believe that more than four out of sixteen menstruate. For instance, the sections that are thrown on the screen showed endometriosis, but showed no blood in these glands. If you take an endometriosis and cut through the sections carefully I do not think you will find evidence of any menstrual function in more than four out of sixteen. The majority of all lesions of endometriosis do not function. Therefore, the conservative treatment of endometriosis is certainly well justified. I think the author is quite right that we should be very careful that we do not mutilate these young women, even taking a chance on a second operation.

(Dr. M. E. Davis did not return his discussion.)

POSTPARTUM HEMORRHAGE IN OUTPATIENT OBSTETRICS

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Obstetrics, which is presumably a physiologic process, may become at a moment's notice pathological. Of the complications which may arise with little warning, one of the most formidable is postpartum hemorrhage. Due to the gravity of this emergency, particularly in out-patient obstetrics, we have analyzed 455 cases of postpartum hemorrhage occurring in 10,651 consecutive deliveries conducted in the home by the Chicago Maternity Center, in an attempt to find the most important factors of etiologic significance.

A loss of 500 c.c. of blood during or immediately following the third stage of labor was classified as a postpartum hemorrhage. In all cases the amount of blood lost was estimated by an interne or resident. Because we are dealing with a transient group of young doctors we have deemed it advisable to overemphasize the seriousness of blood loss, with the natural result that in many instances they have overestimated the actual amount of blood spilt. We take great pains to encourage this attitude, so as to inculcate in their minds a well justified fear and respect for hemorrhage.

In 10,651 consecutive deliveries there were 455 cases of postpartum hemorrhage, an incidence of 4.2% or one in 23.5 deliveries. If we deduct 43 cases in which the babies weighed less than five pounds, we find that the incidence of postpartum hemorrhage in full term deliveries was 4% or one case in 25 deliveries.

Table I. shows the relation of the parity of the patient to postpartum hemorrhage.

TABLE I. PARITY

Type	Number	Percentage
Primipara	85	18.7
Secundipara	94	20.6
Tertipara	80	17.5
Quadripara	50	10.9
Quintipara	47	10.6
Multipara (6 and over)	99	21.7
Total	455	100.0

As can be seen from this table, 18.7% of this series were primipara and 81.3% were multipara, which is approximately the normal relationship of primipara to multipara in all our cases at this clinic. Therefore, postpartum hemorrhage was fairly evenly distributed among the various parities, with the very usual but extremely important exception of an increased tendency toward this complication in the higher multiparas. This is a very important observation made also in other clinics and far too often overlooked.

Regarding the duration of labor in these cases, we have used eighteen hours as the normal length of labor in a primipara and twelve hours in the multipara. Following this standard, we found that 136 or 30% of these cases had what we considered prolonged labors. Still further, if we arbitrarily assume that one and one-half hours is the normal length of the second stage, we found that 80 or 17.5% of these patients had a prolonged second stage of labor, and finally using one hour as the limit for completion of the third stage of labor, we found that 63 or 13.1% had their placentae retained more than this length of time.

Overdistention of the gravid uterus was a significant factor in the causation of this complication, as shown by the following three conditions: First, twin pregnancies occurred fifteen times in this series, an incidence of one in 32.5 deliveries or 3.7%. That this is an unusually high incidence of twin pregnancies is

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adequately demonstrated by the fact that the average occurrence of twin pregnancies at our clinic is one in 91 births or 1.09%. Secondly, referring to Table 2, it is readily apparent that the increased weight of the baby is of extreme importance.

TABLE 2. WEIGHT OF FETUS

<i>Pounds</i>	<i>Number</i>	<i>Percentage</i>
5 and less	43	9.4
5 to 8	172	37.9
8 and over	240	52.7
Total	455	100.0

It is obvious that the weight of the child is a consideration of no little importance when we consider that in 52.7% of these cases the baby weighed eight pounds and over. We also wish to point out at this time that 114 of these babies weighed nine pounds or over, which on analysis means that while over 50% of the babies in this series weighed over eight pounds, 25% of the total number weighed nine pounds or over, emphatically demonstrating the relationship between the size of the fetus and the production of postpartum hemorrhage.

Thirdly, polyhydramnios was present in five or one per cent. of the cases.

The methods employed in the management of the second stage in these cases were as shown in Table 3.

TABLE 3. MANAGEMENT OF THE SECOND STAGE

<i>Type of Delivery</i>	<i>Number</i>	<i>Percentage</i>
Spontaneous	370	83.0
Forceps extraction	53	11.2
Version and extraction.....	12	2.6
Destructive operations	4	0.8
Breech extraction	16	2.4
Total	455	100.0

As can be seen in Table 3, 85 of these cases were terminated by some operative measure from below, an incidence of 17%. When one takes into consideration that the normal operative incidence at this clinic is only eight per cent. one will appreciate the important rôle that operative deliveries have in causing postpartum bleeding.

The manner of management of the third stage of labor is revealed in Table 4.

TABLE 4. MANAGEMENT OF THE THIRD STAGE

<i>Type</i>	<i>Number</i>	<i>Percentage</i>
Spontaneous	145	31.8
Early expression	180	39.5
Credé	60	13.4
Manual removal	70	15.3
Total	455	100.0

The third stage was completed either by spontaneous or early expression in over 70% of the cases. The Credé maneuver was attempted only when the placenta failed to detach after a reasonable period to avoid entering the uterus too often, with its resulting increased morbidity. When manual removal of the placenta had to be resorted to, all solutions were refreshed, the operative field again cleansed, the patient catheterized and sterile gloves were reapplied.

No anesthesia was used in 368 or 79% of these cases. Ether was the anesthesia of choice in 40 or 8.7%, pudendal block was used in 10 cases or 2.1%, and parasacral anesthesia was used in 47 or 10.2%. It is apparent that there is a slight tendency to increased postpartum bleeding in these operative cases where regional or local anesthesia was employed.

The amount of blood lost in these 455 cases was as follows: 500 to 1000 c.c. 290 cases, 1000 to 2000 c.c. 151 cases, and over 2000 c.c. there were 14 cases. The average amount of blood lost in this series was 888.6 c.c. Fifty of these 455 patients were observed to go into shock, or 10.9%, and of those women who showed evidences of shock only three lost less than 1000 c.c. of blood. However, it is our experience at the Center, based on a critical observance of these patients, that the actual amount of blood lost in any given case is only a relative factor in the production of shock, inasmuch as a large obese type of individual can withstand the loss of a considerable amount of blood with no serious systemic reaction, while a thin asthenic woman may show marked signs of shock after a comparatively small hemorrhage. This is a very important factor to keep in mind in the prevention and treatment of this complication.

Table 5. shows a group of cases which for a better name we have designated as miscellaneous causes occurring in this compilation.

TABLE 5. MISCELLANEOUS CAUSES

Rupture of the uterus.....	2
Polyhydramnion	5
Fibroids	3
Abruptio placenta	10
Placenta praevia	9
Bicornate uterus	1
Acute inversion	1
Varicosities of vulva.....	2
Total	42

Maternal Mortality. Two women died in this series of 455 cases, an incidence of 1 in 227 cases or 0.44%. Following is a brief case report of these fatalities.

Case 1. Mrs. D. L., colored, aged 28 years, gravida IV, three full term normal deliveries. Present labor lasted four hours, spontaneous. Third stage lasted fifteen minutes. Placenta delivered by simple expression, and was immediately followed by a severe gush of blood estimated as 1500 c.c. Patient went into shock. She was given 300 c.c. of a 20% solution of glucose in the vein, and adrenalin and caffeine were administered. Gloves were changed and the uterus was manually explored for a possible rupture, but none found. The patient had a rapid downhill course and died in nine hours. The uterus was obtained after it had been perforated by an undertaker's trocar, and an incomplete tear was discovered in the lower uterine segment.

Case 2. Mrs. M. C., white, aged 35 years, gravida IV; two previous spontaneous deliveries and one induced abortion. Labor lasted eight hours and was spontaneous. Placenta and membranes were retained and severe postpartum bleeding ensued. The placenta was removed manually and the uterus packed with 10 yards of plain sterile gauze. Pituitrin, gynergen and cardiac stimulants were given. Fluids were administered under the skin and in the vein. The patient expired in two and one-half hours. Autopsy was refused. Clinical diagnosis, postpartum hemorrhage due to retained placenta.

TABLE 6. TREATMENT

Type	Number	Percentage
Medicinal	357	78.0
Manual removal	70	15.3
Parenteral fluids	53	11.5
Uterine pack	30	6.0
Blood transfusion	13	3.8

In Table 6 several modes of treatment were often employed in the same case, so that there will be an overlapping. A brief outline of our management of the third stage of labor in the home and the treatment employed when the case is complicated by excessive bleeding may prove interesting as well as instructive. As soon as the baby is born the interne administers one

ampule of pituitrin subcutaneously, and then waits for the signs of placental separation, such as rising of the fundus towards the right side, palpation of a soft boggy mass in the lower uterine segment, advancement of the cord and a slightly brisker bleeding. No attempt is made to massage the uterus until these signs are present, so as not to disturb the normal physiologic formation of a retroplacental blood-clot. If bleeding becomes profuse and the placenta is still retained, an attempt is made to Credé the placenta out, and if this fails the placenta is removed manually under the strictest aseptic precautions. The placenta must be removed at one maneuver and the operator's hand must remain in the uterus until the entire placenta is delivered. This will obviate the necessity of repeated insertions of the hand into the uterine cavity with its increased possibilities of infection. If bleeding occurs after the placenta is delivered, a more serious problem presents itself. Pituitrin should be given thus, one ampule by hypodermic or three minims intravenously. The new ergot derivatives, such as ergotrate and ergoklonin, have been found very efficacious in causing the uterus to contract, when given either subcutaneously or intravenously, when a more rapid action is desired. At the same time the operator can compress the anterior lower uterine segment by pressure with his hand filled with gauze in the vagina and at the same time with his external hand he should sharply anteflex the body of the uterus over the symphysis. If bleeding continues, no more time should be wasted and the uterus tightly packed with ten yards of plain sterile gauze, by packing with one hand in the uterine cavity from side to side. All cases, even those that do not go into shock, should be immediately treated for blood loss by normal saline solution under the skin and in the axilla or thighs and hypertonic solutions of glucose and gum acacia intravenously. All severe cases, as soon as a donor is available, should be typed and cross matched and should be immediately given no less than 700 c.c. of blood. The method used is unimportant, the main consideration is to give the woman life-sustaining blood as soon as possible.

Discussion. We have attempted to show by a critical analysis of 455 cases of postpartum

hemorrhage which occurred in 10,651 patients who were delivered in their own unsanitary, squalid homes by young doctors, that many diverse factors operate to predispose to the production of postpartum hemorrhage. Among the more common causes, as shown by a study of the tables, may be mentioned unusually large and post-mature babies, multiparity, over-distention of the uterus, prolongation of the first and second stage of labor, maternal exhaustion, retained placenta and membrane, operative deliveries, and last but not most important is improper management of the third stage of labor. Therefore, prophylactically we should bend all our efforts towards recognizing early these conditions that predispose to postpartum hemorrhage and thus, by expecting it, will be better prepared. Unnecessary and unwarranted interference with the normal mechanism of the third stage of labor is to be decried. Conservation of blood is paramount, and blood transfusion should be thought of immediately and started early.

Summary. 1. An analysis of 455 cases of postpartum hemorrhage in 10,651 or an incidence of four per cent. is herein described.

2. The higher the multiparity the more prone is the patient to hemorrhage.

3. Prolongation of labor, 136 or 30%, is a vital factor.

4. Over-distention of the uterus whether due to multiple pregnancy, polyhydramnios or large fetus, was a factor in 260 cases.

5. Operative deliveries increased the possibilities of hemorrhage.

6. The average amount of blood lost in this study was 888.6 c.c.

7. Of the miscellaneous causes, five were traumatic in origin.

8. There were two maternal deaths in this series, given a mortality incidence of 0.44%.

CONCLUSIONS

1. Good obstetrics can be done in homes under seemingly unsurmountable obstacles, if properly supervised.

2. Operative obstetrics especially in home deliveries should be done only when strictly indicated.

3. Uterine exhaustion in the first stage of labor should be avoided by the administration of

large quantities of fluids and carbohydrates, plus morphine sulphate alone or in combination with a synergist to give the patient plenty of rest. Morphine should not be given within three hours of the expected birth of the child.

4. One should acquaint himself with the proper management of the third stage of labor and avoid all meddlesome manipulations.

5. Blood must be conserved during and after labor to avoid serious infections and even death.

6. Small quantities of blood lost over a period of hours may prove more dangerous to the patient than a sudden large outpouring of blood, which quickly attracts attention.

7. Blood transfusions in amounts not less than 700 c.c. should be given early and freely.

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NEUROBLASTOMA, FROM THE STAND-POINT OF THE ROENTGENOLOGIST

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Virchow in 1864 suggested the nervous tissue origin of these congenital suprarenal tumors but it was not until 1891 that Marchand pointed out a resemblance between the structure of the tumor and that of the developing sympathetic system, suggesting that the tumor was derived from neuroblasts. (Boyd.¹) According to Wiesel, quoted by Kwartin and Twist,¹¹ with the cessation of embryonal life the evolution of the suprarenal medulla is not necessarily completed. Even beyond puberty the medulla contains formative cells or neuroblasts. This explains why neuroblastomas are most frequently found in the suprarenal medulla.

Neuroblastomas are composed of small round cells with dark hyperchromatic nuclei closely resembling the cells of a small round cell sarcoma (Sturtevant and Kelly¹⁹) and for many years were so considered. The distinguishing characteristics microscopically are the presence of fibrils that do not give the characteristic staining reactions of collagen, fibroglia or neuroglia. (Capon.²) The cells are also apt to be arranged in longitudinal bundles and occasion-

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ally in masses around which the neuroblasts are grouped so as to give an appearance commonly known as "rosettes." (Wahl.²¹) An extremely important statement is made by Boyd,¹ "The absence of 'rosettes,' however, does not negative a diagnosis of neuroblastoma."

Neuroblastoma may arise from any portion of the sympathetic nervous system or cranial nerve and occasionally they occur in the central nervous system in which latter case they may be encapsulated but do frequently infiltrate and simulate gliomas. The main seat of such tumors, however, are the suprarenal gland. (Boyd,¹ Ewig.⁴)

There are two clinical types, Pepper and Hutchinson. We are concerned only with the Hutchinson type.

Ewing⁴ divides these tumors into three types, 1. Neuroma ganglioma, 2. Neurocytoma or neuroblastoma and 3. Chromaffin cell tumors or paraganglioma. The following classification from Tidswell and Sear⁴⁹ showing the embryology of the nervous system will help explain the relationship of these various tumors, and may possibly clarify the relationship of the neuroblastomata occurring in children with which this paper deals.

Epiblast		Sympathogonia	
Ependyma (ependymoma)		Sympathoblasts	Phaechromoblast
Neuroepithelium (medulloblast)		Ganglion cell	Phaechromocytes
Neuroblasts	Spongioblasts		Phaechromocyto
Neurocytes	Astroblasts		chromaffinomo
	Astrocytes		Paraanglioma

Case 1. R. S. Hospital Number G. 8536. White. Age 4 years. Admitted Sept. 9, 1932. Family and past history negative.

One month before entrance patient's parents noticed that his left eye seemed to be more widely open than the right. A few days later the right also seemed to bulge. The eyes have been rapidly becoming more prominent.

Examination: The left upper eyelid had a marked discoloration involving the whole upper lid. The right pupil measures 4 mm. and reacted well to light. The left pupil measured 6 mm. and reacted very sluggishly to light. On 9-8-32 a biopsy of the left orbit was done. Dark hemorrhagic tissue was exposed. By 9-13-32 the proptosis of the left eye was much less. No palpable cervical glands and no masses felt in the abdomen. There was no edema of either disc. Patient received 1600 r to each temporal region between 9-9-32 and 9-21-32 with the following factors: 200 K.V., 5 M.A., 50 cm. distance, .50 cu. and 1.0 al. through a port of 8 by 10 cm. Hg. was 70%, R.B.C. 3,570,000 and W.B.C. 7,600. Wassermann was negative. Patient was discharged Oct. 4, 1932, much improved.

Patient returned Nov. 28, 1932, having lost about four pounds with admission temperatures of 101. The proptosis had almost disappeared. Pupils both reacted to light and measured about 3 cm. His head now measured 52.5 cm. in circumference, which was the same as in Sept. Hg. 53% R.B.C. 2,400,000 and W.B.C. 6,300. The differential was Polys. 59%, Mono. 5%, Eocin. 7%, Basket cells 12%, Unclassified 1%, large Lympho. 5%, small Lympho. 11%. The red cells showed some poikilocytosis, anisocytosis and polychromasis. The blood calcium was 10 mgms. per 100 cc. and blood phosphorus 5.6 mgms. per 100 cc. and blood cholesterol 229 mgms. per 100 cc. The blood globulin was 2.92, albumin 2.53, fibrinogen .391. The arm band test was negative. The bleeding time was 8½ minutes, capillary coagulation time 3 minutes, venous coagulation time 4 minutes, fragility .44 - .36, prothrombin time normal, platelets .27%. There were some palpable inguinal glands and the liver was slightly enlarged. Patient received 1000 r to both groins between 12-8-32 and 12-13-32 with the following factors: 130 K.V., 5 M.A., 37.5 cm. distance, .25 cu. and 1.0 al. to a port of about 10 by 15 cm. Patient's temperature continued to be slightly septic and his hemoglobin and blood count continued to fall. On 12-15-32 his hemoglobin was 48%, R.B.C. 2,390,000 and W.B.C. 3,800. He was discharged Dec. 21, 1932.

Patient returned in February, 1933, in very poor condition, being greatly emaciated. Both eyes were markedly proptotic, the left more than the right. The veins of the skull were dilated with separation of the sutures. There was a large soft tissue tumor mass in the left frontoparietal region. All cervical glands were palpable and hard. All gums were infiltrated with spongy tissue. Liver definitely enlarged. No other masses in abdomen. Spleen was not enlarged. There were hard firm bilateral inguinal glands. Circumference of head is now 55 cm. Hg. 25%, R.B.C. 1,490,000, W.B.C. 3,600. Marked anisocytosis and poikilocytosis. Blood cholesterol 227 mgms. per 100 cc., blood calcium 9.2 mgms. per 100 cc., blood phosphorus 4.4 mgms. per 100 cc., albumin 2.8, globulin 2.68, fibrinogen .288, Van den Berg 1 indirect. The bleeding time was 2 minutes, capillary and venous coagulation was 3 minutes, fragility .44 - .36, prothrombin time was 10, 8½, 11, 11, platelets .05%, and clot retractility was 0 in five hours. Patient failed rapidly and died March 12, 1933, continuing to run a septic temperature. No post mortem obtained.

Case 2. I. W. Hospital Number J. 3201. White. Age 5 yrs.

Admitted Mar. 23, 1934. Family and past history negative. In September, 1933, patient began having dull pain in the right hip and lower back. Soon developed a slight limp. Was put in hospital at home in January, 1934, and had been bedridden ever since. Patient has had a very poor appetite since January, 1934, and had lost a little weight. Examination revealed some tenderness to pressure on the medial aspect of the right hip with some impairment of motility. Temperature on this admission ranged from 101 to 103. Hg. 85%, R.B.C. 4,410,000, W.B.C. 6,400, Polys. 22%, large Lympho.

28%, small Lympho. 20%, Basket cells 16%, Mono. 6%, Baso. 1%, Naked nuclei 3%, Unclassified 4%. Bence-Jones protein not found but urine only examined once. O. T. negative 1 to 500. Wassermann negative. Agglutination test for Malta fever, paratyphoid A and B and typhoid fever all negative. Blood culture negative. The bleeding time was 1½ minutes, capillary coagulation time 4 minutes, venus coagulation time 5 minutes, prethrombin time 5, 6, 6, 7, fragility .44 - .36, clot retractility 4 plus, reticulocytes 3.3%. Patient's course was uneventful and she was discharged on 4-27-34 with a Hg. 60% R.B.C. 3,420,000, W.B.C. 9,200.

Patient was readmitted May 22, 1934, with a history of constant headaches since previous discharge. The left eye had become swollen with occasional vomiting attacks. Patient has had severe pains in all extremities which kept her awake at night. Examination showed marked enlargement of the posterior auricular glands. There were four large tumor masses in the scalp with separation of the sutures. All cervical, axillary and inguinal glands were enlarged. Patient had a bilateral papilledema of both eyes. The spleen was not palpable. Hg. 60%, R.B.C. 2,500,000, W.B.C. 7,200, Neutro. 34%, Eocin. 1%, small Lympho. 23%, large Lympho. 15%, Endo. 1%, Basket cells 12%, Myelo. 4%, Band and Polys. 6%, Unclassified 4%. The blood phosphorus 4.5, blood calcium 11.3. B.M.R. was plus 11. On May 25, 1934, the biopsy of a cervical gland was taken. Patient continued to run a septic temperature and on June 11, 1934, x-ray therapy was given in an attempt to relieve pain. 200 r to both femora and to the medical portion of the left knee was given with the following factors: 200 K.V., 4 M.A., .50 Cu. and 1.0 al., through a port of 20 by 20 cm. This seemed to give patient some relief. Patient discharged June 20, 1934, and died at home about two months later.

Case 3. L. C. Hospital Number J. 5145. White. Age 4 years.

Admitted May 13, 1934. Family and past history negative. In October, 1933, patient contracted a bad cold and complained of pain in his right leg. Pain in leg grew worse and he became gradually weaker so that by April, 1934, he was unable to leave his bed. In April, 1934, his head began to enlarge. Two weeks before admission a small mass was noted on the buccal surface of the right cheek. This grew very rapidly so that on entrance patient was unable to close his mouth. Examination showed an emaciated hydrocephalic patient. There was wide separation of the sagittal suture. There was proptosis of both eyes. There was a palpable firm mass filling mouth and apparently arising in the ascending ramus of the right mandible. There were some slightly palpable cervical glands but many palpable inguinal and axillary glands. There was a very firm solid mass in the left upper abdomen which was thought to be spleen. The liver was slightly enlarged. Hg. 30%, R.B.C. 2,500,000, W.B.C. 6,000, Neutro. 68%, Lympho. 20%, Eocin. 1%, Band and Polys. 3%, Basket cells 2% Unclassified 6%. Arm band test was negative. Bleeding time was 1 minute, capillary and venus coagulation time 4½ minutes each, prothrombin time 4 min-

utes, fragility .5 - .36, clot retractility 2 plus, platelets .35%, reticulocytes 5%. There was variation in the size, shape and staining of the red blood cells. Wassermann negative. The total blood protein was 5.77, fibrinogen .34, albumin 2.6, globulin 2.83, blood cholesterol 178 mgms. per 100 cc. blood calcium 9.75 mgms. per 100 cc., blood phosphorus 3.54 mgms. per 100 cc. Patient's course was steadily downwards and between May 21, 1934, and May 24, 1934, he was given 800 r to the left lateral skull and 800 r to the right lateral skull with the following factors: 200 K.V., 4 M.A., .50 Cu. and 1.0 al. at 50 cm. distance to a field of 10 by 15 cm. This was done because the parents insisted on some type of treatment. Patient died on May 25, 1934, and parents permitted a piece of the tumor mass in the mouth to be removed but no autopsy permitted.

Discussion—These three patients had proptosis, hydrocephalus, marked secondary anemia with destructive and proliferative lesions involving the greater portion of the skeletal system, including both the long and flat bones. No abdominal tumors were felt but as Hutchinson⁸ pointed out, abdominal tumors are not always palpable. The Roentgen ray appearance of the first two cases is a characteristic finding. The "whiskers" seen along the left ischium of case 1 and along the lower end of both femora in case 3, in conjunction with the widespread destructive process should make the diagnosis. Boyd¹ has noted this peculiar type of periosteal reaction as noted along the skull giving it a "porcupine" appearance. Tileston and Wolbach (quoted by Holmes and Dresser⁷) also have mentioned these bony spicules occurring in the substance of the tumor involving the anterior fossa of the skull which had extended through an opening in the frontal bones. Holmes and Dresser⁷ mention the periosteal reaction as being characteristic and state that they "may be accompanied by spicule formation in both the flat and long bones." These findings have also been stressed by Henle,⁶ Vogt,^{20a} Lewis,¹⁴ Tidswell and Sears,²⁰ Lederer¹² and Klein.¹⁰ Case 2 showed a destructive process of the skeletal system, rather widespread, with periosteal elevation along the shafts of both femora. These changes sometimes occur in leukemia (Karelitz⁹). Holmes⁷ feels that a destruction in the long bones and a periosteal reaction is not uncommon in neuroblastoma whereas Geschickter and Lewis¹³ feel that these findings are rare in neuroblastoma and are more typical of leukemia and lymphosarcoma.

The spicule formation might be explained to a

slow lifting of the periosteum due to infiltration of the tumor tissue which might have extended through the cortex from the lymphatics. Another explanation is that given by Greig,⁵ "the appearances suggest an invasion of the bone from without, a decalcification by halisteresis or by the removal of the calcium as granules, the setting free of bone cells in a vascularity, insuring a superabundance of pabulum where bone changes have already provided a local excess of calcium."

Frews, as stated by Boyd,¹ concluded that metastases take place along the lymphatic vessels, thus in left suprarenal tumors he found enlargement of the pre-aortic group of lumbar glands with extension: 1. downward along the aorta, the common iliacs and the internal and external iliac arteries; 2. to the gland at the hilum of the liver and then into the substance of the liver along the portal spaces; 3. up through the posterior mediastinum, along the line of the thoracic duct and through the anterior deep cervical glands, along the carotid sheath and to the base of the skull along the internal carotid; 4. along the glands running forward in the intercostal spaces. The proptosis comes most likely from involvement of the sphenoid ridge and the posterior wall of the orbit. (Leinfelder.^{12a})

On the right side the lymphatics run into the right lymphatic trunk without establishing any extensive connection with the lumbar glands. The glands that may be implicated are those on the upper surface of the liver, the anterior mediastinal glands on the right side, the glands at the root of both lungs, and the anterior deep cervical glands on the right side. The surface of the liver will be extensively involved.

While Frews' explanations sound very plausible, practically these metastases have not always occurred as he stated. (Scott, Oliver and Oliver,¹⁸ Geschickter and Lewis,¹³ Lewis.¹⁴)

The pathological diagnosis of neuroblastoma if only a biopsy is available and no post mortem obtained is rather difficult. If characteristic "rosettes" are found the diagnosis can be made with certainty. The absence of "rosettes," however, does not rule out the condition as in the forty cases studied by the Geschickter and Lewis¹³ only one-third showed "rosettes" and, to quote Ewing,⁴ "the metastases are usually of round cell highly undifferentiated with a considerable

Since the characteristic finding is a small round cell highly undifferentiated with a considerable amount of fibrillar material the condition is often confused with Ewing's and other highly undifferentiated neoplasms. It is for this reason that the bone changes are so significant although Colville and Willis³ report a case that had the Roentgen Ray findings of a Ewing's, whose biopsy was that of a small round cell yet post mortem revealed the primary to be in the suprarenal. This case led them to believe that the diagnosis of Ewing's endothelioma of bone should not be absolutely made until the complete post mortem has been done.

Therapy—Surgery offers little help. Lehman in 1917 reported a case in which operation had been performed in 1916. The tumor was removed and the patient was reported well in 1931. (Geschickter and Lewis.¹³) No other cases have survived.

Randall¹⁶ has recently reported a case which received preoperative irradiation and was well ten months after surgery.

Case 1 demonstrates how sensitive the lesions are to Roentgen ray therapy although the prognosis was unaltered.

Differential Diagnosis—Hematopoietic disturbances such as chloroma and leukemia have to be considered. The examination of the blood smear, however, should rule these out.

The perpendicular striations of the skull might make one think of a meningioma but examination of the remainder of the skeletal system would rule this out as meningioma are limited to the skull.

The so-called Wilm's tumor of the kidney will also present an abdominal mass but their chief point of metastases is to the lungs as well as locally and when they do metastasize to the skeletal system, which is late in the disease, the lesions appear to be only destructive and are well localized, somewhat like other metastatic malignancies. Microscopically, fibrils are not found in tumors of the kidney. (Mixer¹⁵)

Myeloblastoma (aleukemic myelosis) might give such skeletal changes but theyeloblast can be recognized on sections. (Rypins.¹⁷)

CONCLUSIONS

1. Neuroblastoma when it metastasizes to the skeletal system gives Roentgen ray findings char-

acterized principally by perpendicular calcium striations or "whiskers."

2. Given a young patient with proptosis, hydrocephalus, secondary anemia and widespread changes in skeletal system, particularly "whiskers" a definite diagnosis of neuroblastoma should be made.

3. Neuroblastoma are sensitive to irradiation if treated while the patient is still in relatively good condition.

The microscopic sections were reviewed by Dr. E. P. Warner of the Department of Pathology, University of Iowa, to whom I wish to acknowledge my thanks.

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DISCUSSION

Dr. Cesare Gianturco, Urbana: I believe that Dr. Rypins should be commended for bringing to our attention the peculiar syndrome caused by these rare tumors.

It is most interesting that these tumors of the suprarenal gland should metastasize in such a characteristic way; in the so-called Hutchinson type most metastases occur in the skeleton and especially in the sphenoid bone where they produce prominence of the eyeballs. In the so-called Pepper type the metastases occur in liver, spleen, and in the lymph glands of the abdomen and mediastinum. Several explanations have been advanced in order to explain why these tumors seem to prefer one or the other metastatic distributions but no theory can be considered as satisfactory; up to the present time, at least, we must be contented with the observation of a neoplasm which sometimes metastasizes to certain bones, sometimes to certain viscera, very seldom to both.

I cannot quite agree with Dr. Rypins' statement that a syndrome such as he described should make the roentgenologist establish a definite diagnosis of neuroblastoma. Neuroblastoma is a histological diagnosis and although sometimes it is possible to make a histological diagnosis from the roentgenological signs I do not believe that the bony changes observed in the cases of neuroblastoma published in literature as well as those just presented by Dr. Rypins are characteristic enough to be pathognomonic of this disease. Some of the changes occurring in the long bones could easily warrant a diagnosis of Ewing's endothelioma, osteogenic sarcoma or even osteomyelitis. The whiskers which should be characteristic of neuroblastoma according to Dr. Rypins, are not always found in this disease, while they are a rather common occurrence in osteogenic sarcomas, meningiomas and other tumors of the bone.

I do agree with Dr. Rypins that the presence of multiple bone changes associated with proptosis, anemia, hydrocephalus, and fever should make one consider the possibility of a neuroblastoma. On this assumption one should try to establish the existence of a primary tumor of the adrenals. A flat film of the abdomen might yield precious information as to size and shape of the kidney shadows; if this investigation fails one can obtain an excellent visualization of the suprarenal glands by means of the injection of gas into the peri-renal space; the chest and the gastrointestinal tract should also be examined in a careful way roentgenologically and with other means of diagnosis; a biopsy might be of immense value.

In my opinion it is only after the presence of a primary tumor in the adrenal gland has been ascertained that one can establish in a definite way a diagnosis of neuroblastoma of adrenal origin.

Dr. T. J. Wachowski: I think Dr. Rypins showed three very nice cases of neuroblastoma. I was particularly interested in the response to irradiation therapy as evidenced by the photographs before and after treatment.

We had one case to which we gave 3,000 r rather intensively. It absolutely failed to remove that tumor. It was located in the upper part of the thoracic cage where we could follow it carefully with serial roentgenograms.

I believe I remember seeing so-called whiskers or calcification following periosteal elevation in a child with a leukemia. I do not want to be definite, but I am quite certain I saw films of that type, so that gives another condition which would have to be excluded in making positive diagnosis in this condition from a purely roentgenological standpoint. I agree thoroughly with Dr. Gianturco relative to a clinical syndrome. In cases we have seen it was only by correlation of everything that we could make the diagnosis. The cases Dr. Rypins has seen are apparently late. Given a primary tumor in cervical sympathetics, one would be quite unable to make such diagnosis. On the basis of such extensive bone metastases, however, I think the probable diagnosis can be very often suggested.

ROENTGEN THERAPY OF CELLULITIS

B. C. CUSHWAY, M. D., and R. J. MAIER, M. D.

CHICAGO

The almost specific action of roentgen rays upon early infections has not been sufficiently emphasized by the radiologists in this country although the foreign literature contains an abundance of references to this valuable aid in the handling of infections. Roentgen rays and the rays given off by radium in its process of decay have, since very shortly after their discovery, been known to have very pronounced effect on living tissues. Only by extensive animal experimentation and observation of the effects of these rays on different types of both normal and pathological tissues have their specific action and therapeutic indications been determined.

Many of the biological reactions were observed in injuries and reactions produced in those who were working and experimenting with roentgen rays in the production of radiographs. As early as 1905 a number of cases of sterilization had been reported among these workers. From this time on roentgen rays were used on almost every type of lesion but it was not until instruments for precise measurement of dosage were perfected that anything like uniform results could be obtained. Likewise it was not until various workers had pooled their experience and results that any kind of prognosis could be made concerning the results that might be expected in the

various types of lesions. In order to explain or understand the rationale of any form of treatment the biological action of the agent used and the pathological tissue change produced must be determined as far as possible. The different varieties of body cells are sensitive in varying degrees to the action of roentgen rays and radium. Some are extremely sensitive and others extremely resistant tolerating large doses of radiation. When radiation is applied to a certain type of tissue cell a certain proportion of these cells are destroyed, others are only slightly injured and the remainder may show no injurious effect. Those only slightly injured later undergo complete regeneration or remain alive deprived of one or more functions not necessary to the life of the cell.

According to Desjardins¹ cells may be classified in the order of their degree of sensitivity as follows:

Lymphoid cells—lymphocytes found in the spleen, lymph nodes, blood, bone marrow, thymus and tonsils.

Polymorphonuclear leukocytes found in the blood or tissues.

Epithelial cells found in certain secretory glands, basal epithelium of the testes and ovary, basal epithelium of the skin and mucous membranes, alveolar epithelium of the lungs, bile ducts and liver and epithelium of tubules of the kidneys.

Endothelial cells of blood vessels, pleura and peritoneum.

Connective tissue cells.

Muscle cells.

Bone cells.

Fat cells.

Nerve cells.

The younger and more active the cell the more susceptible it is to the influence of radiation, but the relation of the age of the cell to its relative sensitiveness is less important than the specific vulnerability of the different varieties of cells.

Early in the application of roentgen rays for therapeutic purposes it was felt that the beneficial effects of radiation might be due to a stimulating effect of the radiation, this stimulating action causing an increase in tissue vitality sufficient to successfully combat the pathological process. One reason for the advance of this theory has been that regression of pathological lesions has taken place after exposure to small doses of roentgen rays. This is probably better explained as being due to a high degree of radiosensitivity of the tissue cells involved. Desjardins feels that the theory regarding the stimulating

¹Read before the Section on Radiology of the Illinois State Medical Society, Springfield, May 20, 1936.

effect of radiation has arisen from the attempt to apply to radiation the so-called Arndt-Schulz law according to which small doses stimulate and large doses depress cellular metabolism. Based on pharmacologic grounds this doctrine has not been generally accepted even by pharmacologists. The attempt to apply this law to the action of roentgen rays is unwarranted because the experimental evidence on which it is based is extremely meager and apparently invalid. Experimental work on glandular tissue such as the salivary and gastric glands, also experiments on the effects of radiation on the secretory activity of the kidney show a very transient increase of secretory activity in response to radiation. The phase of increase in glandular function is of such a short duration and so quickly replaced by a decrease in glandular activity below normal that we may feel that any apparent stimulating effect associated with the application of radiation is but the alteration of a normal to an aberrant function due to irritation. Secondary and indirect stimulation may sometimes be observed as the result of a primary degenerative effect on certain cells.

At the present time we believe that the first biological effect of radiation is irritation. This irritation may lead to a temporary transient phase of increased cellular activity. This is followed almost immediately by cellular destruction and depressed function. Continued acceleration of metabolism cannot be produced by radiation. Degenerative changes practically always follow except in extremely resistant tissue where no effect whatever may be observed.

Among the various lesions experimentally treated with radiation infections of all kinds were from time to time included. The body's method of fighting an infection is to rush to the site large numbers of leukocytes which have the power to ingest and digest the invading organisms. The antibodies produced by these cells are entirely endogenous and not exogenous, hence, only those organisms ingested by the cells are effected by them, leaving all other organisms free to grow, reproduce and excrete toxins. No free antibodies are present in the tissues until the leukocytes begin to die and break up as the result of infection, except for small quantities that may be present in the blood and lymph, the result of some previous infection. These, however, are always in small quantities and not sufficient to

greatly retard the process of a virulent infection. Only after large numbers of leukocytes have been destroyed does the concentration of antibodies become sufficient to retard the growth, reproduction and excretion of the invading organisms sufficiently that they may be overcome. It is this destruction of leukocytes and liberation of antibodies we seek to cause by irradiation.

Due to the marked susceptibility of leukocytes and particularly lymphocytes as brought out by Warthin² degenerative changes are noted as early as 15 minutes after a moderately large exposure to roentgen rays. With a proper regulation of dosage the leukocytes may be the only cells in an area destroyed by irradiation. The rapid destruction of leukocytes by radiation in an infected area frees large quantities of antibodies at the site of infection retarding growth, excretion of toxins and killing invading organisms. The lysins also contained in these cells promote rapid liquefaction and drainage of tissue too badly injured for repair. If treated early, however, such injury does not occur and the tissues quickly return to normal. Only in advanced or long standing cases are incision and drainage necessary and when preceded by irradiation the convalescence should be shortened due to the rapid liquefaction of the injured or necrotic tissue. This is the most logical explanation of the excellent results, rapid improvement and recovery in the series of cellulitis cases that we have treated by irradiation practically without the use of surgery.

As before stated practically all kinds of infections have at one time or another been subjected to various exposures of roentgen rays. Hodges³ has found that among these certain types respond or are particularly susceptible to irradiation. Particularly furuncles, carbuncles, metastatic parotitis, erysipelas, "Ludwig's" angina or cellulitis of the mouth, face and neck following extraction of teeth or other acute infections usually originating in or about the mouth, show almost specific response to roentgen therapy.

Cellulitis is an acute inflammatory condition due to infection and is especially prone to follow tissue injury. As in most infections there is an attempt by the protective agents of the body to wall off the infection. As a part of this protective function leukocytic infiltration is an important phase. Clinically this is shown by local pain, swelling, discoloration and the systemic re-

action as evidenced by chills, fever and toxicity. In this presentation we will discuss particularly those infections of the face and neck which have their origin in infected teeth or other infections about the mouth but we wish to include several cases in which the acuteness and type of infection was very similar although the infection was not of oral origin.

During the past two years we have treated a series of over 80 cases of infection involving the face and neck, nearly all of which were due or had their origin in infection around the teeth and following extractions of the teeth. These patients when first seen by us presented various degrees of cellulitis some confined to areas only five cm. in diameter while in others the whole side of the face, the floor of the mouth and the soft tissues of the anterior part of the neck down to the clavicle were involved. Most of these patients suffered with dysphagia, many were unable to swallow at all and had a definite degree of dyspnea. It was with difficulty in many patients that the teeth could be separated. Due to the dysphagia and trismus present many of these patients were rapidly becoming dehydrated. Most of the patients were toxic with a temperature ranging from 99.6 to 103 and with a rapidly spreading infection. Each patient was given radiation over the infected area using three-fourths skin erythema dose of a quality that would be largely absorbed in the first five cm. of tissue. A second treatment was administered in 36 to 48 hours of one-half to three-fourths skin erythema dose. Within four to eight hours there was usually an increase in the pain and swelling that lasted four to six hours. This pain was of sufficient intensity to demand the administration of sedatives. After a period of from eight to twelve hours rapid amelioration of symptoms and swelling was observed, the patients being almost free of pain, difficulty of breathing and swallowing within 24 to 36 hours. Following the second treatment the infection rapidly receded with little or no reaction in the skin other than complete temporary epilation. Occasionally slight tanning of the skin may remain over a period of from two to four months. With the exception of two cases resulting fatally, which we will later refer to in the case reports and several cases which required slight drainage, the convalescence in these cases has been rapid and uneventful.

We do not want to leave the impression that all that is necessary in the treatment of massive cellulitis is the application of one or two doses of roentgen rays. The attending physician must play his part or the irradiation will not suffice. The judicious use of heat or cold to the part, proper drainage of the source of infection and cleansing of the mouth are absolute necessities. Due to the rapid destruction of cells in the area there is a definite exacerbation or increase in the amount of edema, inflammation and pain which occurs from four to eight hours after the treatment and continues for about twelve hours. This exacerbation and increase of symptoms is such that some opiate is usually necessary for its alleviation so that the patient may obtain the necessary rest which is always desirable in infections. It is only through close cooperation between the radiologist and the attending physician that the rapid recovery of these patients can be obtained.

The following ten cases were selected to show the effect of roentgen therapy in the various types of lesions discussed in this presentation. They are briefly summarized as a basis of evaluation of this method of treatment of these types of infection. A review of these ten cases affords a cross section through the series treated and illustrate the variation in location of the lesions and the difference in the exciting cause.

CASE REPORTS

Case 1. Miss A. C., aged 24 years. Source of infection, dental. History of onset: November 27, 1934, patient had lower left first molar removed under novocaine anesthesia. This was followed by pain and swelling in the left side of the face. Patient became listless, refused to eat or drink fluids. Present condition—marked edema in left side of face with induration, trismus, foul breath, pain upon palpation, enlargement of submaxillary and sublingual glands, foul discharge from lower left first molar area and difficulty upon swallowing. Temperature 103.2, respiration 36, pulse 99, blood examination: erythrocytes 4,306,000, hemoglobin 89%, leukocytes 16,000.

Diagnosis: Cellulitis following dental infection.

Treatment: December 1, three-fourths skin erythema dose of roentgen rays. December 3, one-half skin erythema dose. Course: Pain was very severe after first radiation treatment lasting eight to ten hours. All symptoms were greatly reduced following the first treatment. Patient was able to swallow liquids and semisolids with considerable comfort. Following the second treatment patient remained at home but not in bed and returned to work the following Monday.

Case 2. Mrs. J. H., aged 40 years, Source of in-

fection, dental. History of onset: Patient had lower left molar extracted under local anesthesia.

Present condition—swelling involving the left side of the face and neck up to level of radiographic base line and extending downward on neck and backward to angle of jaw. Area is tense, indurated, and hot to touch, also swelling to lesser extent involving the right side of the face below angle of jaw.

Treatment: June 8, 60% skin erythema dose and repeated June 10.

Course: Infected area draining into mouth June 12. Definite improvement in 48 hours.

Results—uneventful recovery.

Case 3. Master D. B. aged six years. Source of infection, dental. History of onset: Five days previous to admittance patient had treatment of lower left first premolar tooth. The following day tooth became very painful and left side of face began to swell.

Present condition—massive swelling over left side of face and neck, patient listless, refused to eat or drink.

Temperature 101, respiration 32, pulse 91, leukocytes 11,000.

Diagnosis: Cellulitis.

Treatment: Lower left first premolar removed and a quantity of pus evacuated followed by roentgen therapy. The radiation dose repeated in 48 hours.

Course: Necessary to control pain with sedatives first 12 hours.

Result—uneventful recovery.

Case 4. Miss V. K., aged 25 years. Source of infection, dental. History of onset: Three days previous to admittance patient had lower left third molar removed under local anesthesia. Following day had marked swelling and pain over the left side of face. Swelling gradually increased and a foul smelling discharge from the lower left third molar area developed.

Present condition—pain on the left side of face, dysphagia, temporary trismus. There was swelling of the left side of the face and in the submaxillary and sublingual regions.

Temperature 103, pulse 130, respiration 30, leukocytes 15,600.

Diagnosis: Cellulitis. Treatment: Roentgen therapy given on day of admittance and dose repeated in 24 hours. This was accompanied by the usual external application of cold and hot oral irrigations.

Course: After first roentgen treatment pain became very severe. Temperature rose to 104. Following the second treatment pain gradually subsided, temperature, pulse and respiration returned to normal within three days and patient could again swallow with comfort and clean her mouth by means of a toothbrush.

Result—uneventful recovery.

Case 5. Miss J. S., aged 30 years. Source of infection: Pustule on right side of face opposite the ala of the nose. History of onset: Patient admitted applying pressure in order to evacuate a small pustule three days previous to examination.

Present condition—patient unable to sleep because of the pain for the past two or three nights. There is present an indurated, edematous area about one-half

inch in diameter, which is markedly painful. Temperature 99.6, pulse, 75, respiration 18.

No blood work done.

Diagnosis: Local infection. Treatment: One-half skin erythema dose roentgen rays and dose repeated in 48 hours. Course: Treatment followed by increased pain necessitating sedative. At time of second treatment pain had practically ceased and induration and swelling disappeared.

Result—uneventful recovery.

Case 6. Mr. P. G., aged 43 years. Source of infection: Laceration on the left side of the face just beneath the eye.

History of onset: 48 hours previous to admittance patient received a laceration from the nozzle of a garden hose. There was profuse bleeding. 24 hours after accident patient was seized with a violent chill and temperature of 104.6. Patient became toxic and irrational.

Present condition—on admission there was marked swelling of left cheek over malar area, left eye completely closed, abrasion approximately one-half inch in length over infraorbital ridge. Apparently no discharge was perceptible. Pain was intense. Temperature 99.8, pulse 90, respiration 22, leukocytes 12,300.

Diagnosis: Cellulitis.

Treatment: On evening of admission to hospital patient was given three-fourths skin erythema dose roentgen rays and 36 hours later one-half skin erythema dose. This was accompanied by applications of moist heat.

Course: Six hours following first treatment temperature was 103, patient having considerable pain necessitating a sedative and there was an increase in the pain and swelling. Within eighteen hours, however, temperature had returned to normal with complete relief of pain.

Result—patient discharged as recovered 72 hours following admittance. No incision or drainage necessary.

Case 7. Mr. F. C., aged 36 years. Source of infection, dental. History of onset: Five days previous to admittance pain started in upper left third molar. This was followed by swelling in the region of the parotid gland accompanied by pain and trismus. Present condition—hard indurated swelling in the region of the parotid gland, painful on palpation, dysphagia and general malaise. Temperature 102.3, pulse 101, respiration 31, leukocytes 11,000.

Diagnosis: Parotitis secondary to dental infection.

Treatment: Upper left third molar removed by oral surgeon under nitrous oxide and oxygen anesthesia and roentgen therapy applied over left parotid gland region. Sedatives were given for pain. Roentgen ray treatment repeated in 48 hours.

Course: Severe pain lasting approximately 10 hours, followed by rapid amelioration of symptoms within 24 hours and patient returned to work within a week.

Result—uneventful recovery.

Case 8. Mr. E. T., aged 35 years. Source of infection, unknown. History of onset: Patient had gas-

troenteritis three or four days previous to onset of present illness.

Present condition—marked swelling of the left parotid gland, painful in character and red in color. Duct unobstructed. Trismus and dysphagia. Temperature 99.6, respiration 18, pulse 74, leukocytes 8,700. Diagnosis: Parotitis. Treatment: Roentgen therapy given on day of admittance and repeated in 48 hours.

Course: Treatment followed by moderate reaction followed by rapid decrease in all symptoms.

Result—uneventful recovery.

Case 9. Mrs. E. C., aged 23 years. Source of infection, dental. History of onset: Lower right first molar extracted four days previous to admittance. Following the extraction swelling in side of neck and submaxillary region developed with pain and tenderness to pressure.

Present condition—pain, malaise, headache, chills and fever. Massive induration and swelling over right side of the face and neck including the floor of the mouth. Difficulty in breathing and dysphagia were present.

Diagnosis: Massive cellulitis.

Treatment: Three-fourths skin erythema dose roentgen rays on day of admittance followed in three days by a second treatment of one-half skin erythema dose. Patient was not cooperative and went to another hospital causing delay in treatment.

Course: Local induration and swelling reduced but patient developed a pneumonia which terminated fatally seven days following the extraction of the tooth.

Anatomical diagnosis of cause of death—Ludwig's angina, diffuse cellulitis, suppuration with abscess formation and gangrene in soft tissues of neck, generalized lymphadenitis, pharyngitis, bronchitis, pneumonia of right and left lungs.

Case 10. Miss D., aged 17 years. Source of infection, tonsil. History of onset: Peritonsillar abscess starting two weeks previous to admittance.

Present condition—cellulitis involving right parotid and submaxillary region and extending to the right eye, duration four days. Temperature 101 on admission but increased to 104.6 within 24 hours. Leukocytes 25,450. There was evidence of bronchial infection in the lower left lung and patient was extremely toxic and in moribund condition.

Diagnosis: Massive cellulitis, pneumonia. Treatment: One dose roentgen therapy.

Result—patient expired 24 hours after treatment with no apparent response.

The last two cases which terminated fatally were included mainly to show the serious possibilities of these infections. Both cases had too long delayed and insufficient treatment.

Summary: We have presented a cross section of the results of roentgen therapy in a series of eighty cases of cellulitis. The ten case histories discussed in detail represent an average of the entire series. The results were almost specific in all but two cases as above cited. In these two of

unfavorable termination the method of treatment was not given a fair chance. One because of lack of cooperation on the part of the patient, the other because the patient was practically in extremis before starting therapy. These two cases are discussed however because they show the potentially serious outcome of these types of infection.

Five of these cases developed a cellulitis following the extraction of a tooth under local anesthesia. Two cases developed a parotitis as an extension of infection. One of these was associated with infection around the upper left third molar, the second was a simple inflammatory reaction involving the parotid gland apparently without infection associated with the teeth. One case developed a cellulitis involving the floor of the mouth and submaxillary region secondary to infection in a lower first premolar tooth. This infection developed in connection with the treatment of the tooth; no extraction was done in this case. One case of infection associated with a simple papule or pustule at the side of the nose, there being no association here with dental infection. One case developed localized infection following an abrasion over the cheek in the malar region.

The cases discussed were mostly those of cellulitis complicating oral infection. However, roentgen therapy can be used in treatment of cellulitis in other locations with equally good results. For instance, we treated in this series, cellulitis of the foot, cellulitis following mastoidectomy and following skin abrasions. Also the case of a five year old girl who had surgical incision and drainage of abscess in the neck followed a few days later by area of infection in foot. Temperature was 105.4. Bone structure negative as shown by roentgenogram. Roentgen therapy was administered with complete relief from pain and decrease in swelling in 24 hours and normal temperature within 48 hours. Complete uneventful recovery followed in a few days. The results of roentgen therapy were found to be uniform in the various types and locations of infection.

CONCLUSIONS

1. Roentgen therapy is the rational treatment of infections involving the soft tissues of the mouth, face and neck.

2. Surgery is unnecessary or contraindicated in most such infections.

3. Results are rapid and with few exceptions excellent.

4. Treatment is painless and when properly supervised does no harm and leaves no scars.

5. With rare exceptions no subsequent dressings or treatments are necessary.

6. The earlier in the course of the infection the roentgen therapy can be started the better the results.

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DISCUSSION

Dr. I. S. Trostler: I agree entirely with the essayists in regard to practically everything they have said. Such disagreement as I have will be mainly variations in technique. It has been my experience we do not have as much complaint after treatment as the essayists mentioned. That may be due to my applying less. I am in the habit of applying a fourth to two-fifths of a dose at the time of the first treatment. The difference in the amount of x-ray applied probably produces that variation in swelling due to breakdown of the cells and in that way perhaps an increase in the amount of pain from pressure.

In all acute infections, particularly cellulitis, we have found that radiation applied after the manner of the essayists gives relief, promptly, efficiently and is in my opinion preferable to anything we have. Of course, we have to use the clinical measures, heat, cold, elimination and all the other medicinal things. X-ray alone probably would not produce those effects.

I have in mind three cases I would like to discuss briefly. The first is a very common type wherein an attorney of forty-five foolishly pulled out some hairs from his nostrils. In a few days he had a cellulitis in the nostrils, lips and lower part of one cheek. He was sent to me by a general practitioner for whom I had treated a carbuncle a few weeks before, and who liked the results so well he thought this case would be amenable to x-ray. He received two-fifths of a dose, 160 r, repeated the next day and reported completely relieved from pain in twenty hours. Great reduction in swelling in thirty-six hours and almost complete disappearance of the swelling in forty-eight hours.

The next case is especially interesting, a case of recurrent lymphedema due to periodic recurrent streptococcus infection of the lower half of one leg. This man had an epidermophytosis (so-called athlete's foot) for nearly fifteen years and had all kinds of lotions, salves, pastes and everything you could think of prescribed by numerous physicians, counter-prescribing pharmacists and wiseacre friends. The recurrent lymphedema began about five years before. Each attack came at shorter intervals and was ushered in by a chill

followed by fever and swelling, temperature up to 104 degrees and intense pain. Each attack left the leg with an increased amount of edema. When he came to me one leg was three and three-quarters inches larger in circumference at the principal swollen level. It was between attacks and it had the resistance of the scleroderma we see in children once in a while, showing marked pitting which remained for more than half an hour. He had been having these attacks of lymphedema about every three or four weeks.

He was a big husky fellow, thirty-seven years of age, who because of this ailment had become morose and ready to do almost anything, when the surgeon sent him to me. At that time the leg was of a dull bluish color and quite sensitive to touch. Up to this time the man has received seven applications at weekly intervals and six at bi-weekly intervals. He is still under treatment. The size of the leg has been greatly reduced. It is now but little larger than the other leg. I expect to give him treatment about once a month for three or four months and later once every six weeks, and keep him under observation for about a year. He has had no recurrence of the lymphedema for over five months, the longest period of relief he has had for five years.

The last case I want to refer to is as a caution to the roentgenologists more than a clinical case although it comes in the same clinical group as those Dr. Cushway presented. An eye, ear, nose and throat specialist—who should have known better—pulled a hair out of his nostril and developed a cellulitis of the nose, upper lip and cheek. After a few days of hot applications he went to a leading otolaryngologist. (I include all this because this patient is an eye, ear, nose and throat man). He went to the otolaryngologist who sent him to a radiologist to whom he had been sending his work. Not finding the radiologist in he came to me and I applied 100 r, suggesting that he telephone or come to see me the next day. On the second day after that he called me up in the morning about ten o'clock, told me how much better he felt and that he was going to see his attending physician, after which they would decide whether he needed more x-ray treatment.

In order to have the best and most advantageous results I called up the man who was taking care of him. He was not in but I left word for him to call me when he came in. He did not call me but another radiologist—the man to whom he had been sent—called me and asked how much x-ray I had given this patient. He had terror in his voice when he asked the question and when I told him I had given only 100 r I could hear him heave a deep sigh of relief. He said, "He came to my office yesterday morning and I gave him 200 r. He did not tell me he had had any x-ray before." I told him to use his own judgment but I would advise not giving him any more and to send him to me as I wanted to tell him what I thought.

The man who had given him treatment the second day had no idea he had any x-ray, and you can understand what chances he had taken on producing overdosage. We should *always* and *invariably* ask every patient, "Have you had any x-ray treatment before?" No therapy should be applied without asking that question.

I want to compliment the essayists on presenting this paper—which is the type of paper we should read in our section—the type of paper which should be published in the *ILLINOIS MEDICAL JOURNAL*, so that the general practitioners and the other specialists will know what we are doing and what we are able to do.

Dr. P. G. Papsdorf: Mr. Chairman and Dr. Cushway: I am glad to be here because it gives me an opportunity to attest to some of the things Dr. Cushway has done for me relative to saving the lives of my patients. He has not only helped to save some of my patient's lives, but he also saved my own life. As I happen to be one of the individuals whose cases he cited.

This paper is really worth while repeating in the Sections of Medicine and Surgery, because, after all, that is where it is needed most. We have to attempt to convince the surgeon and general practitioner of the value of x-ray therapy in the treatment of cellulitis of the face and neck. It is strictly, as the essayist said, a physician's problem in spite of the fact that most of these cases are of dental origin, and we know the minute the dentist gets into a little trouble after having injected novocain into the soft tissues of the oral cavity, he throws up his hands, and does not know what to do. If the physician does not know how to handle these cases it is too bad for our patient.

Up to about two years ago, we used to attempt to establish drainage in this type of case, and every once in a while it became our painful duty to sign a death certificate. Since that time fortunately in a series of over eighty cases, we have had only one death. So I am quite enthusiastic about the treatment of cellulitis of the face and neck by x-ray.

I am glad the essayist mentioned the fact that the x-ray must not be looked upon as a panacea for the treatment of cellulitis of the face and neck. We need the strict cooperation of the attending physician. He must know how to treat these cases. They must have systemic treatment, must have supportive treatment. If they have pain, it must be taken care of by means of hypnotics. The question of hot or cold application occurs a good many times. At first we used the application of heat; hot epsom salt or boric acid applications. Later we found several little pockets developing along the facial area and had to open them, so we decided to discontinue the extra-oral application of heat and apply ice extra-orally, and heat intra-orally.

In giving instructions to the nurses, we have to be very careful in telling them just what we mean by heat intra-orally, which means approximately every ten or fifteen minutes during the waking hours of the patient. The oral cavity must be irrigated with hot saline solution or any solution one desires as long as it is hot. In that way oftentimes we get a spontaneous eruption of the pus area intra-orally, which, of course, helps us a great deal. The minute we have a spontaneous eruption of this pus area intra-orally, the patient is going to get relief.

I wish to compliment the essayist on the presentation of this paper.

Dr. H. A. Olin, Chicago: I think Dr. Cushway is to be complimented upon this timely paper. Within the

past year there appeared in the *ILLINOIS MEDICAL JOURNAL* a paper on the surgical treatment of cellulitis about the face and neck. On reading that paper one would gain the impression that surgery was the treatment of choice. I think there is a prevailing opinion among all practitioners that the treatment of cellulitis about the face and neck is surgical, and that is the reason I feel this paper is very timely.

I believe Dr. Cushway perhaps did not emphasize the fact that palliative measures like x-ray therapy are the treatment of choice and surgery should only be instituted where there is localization of the pus or where there happens to be rupture of the suppuration, in the mouth, cheek or face. Dr. Nichols, of Harvard, emphasized to me some years ago, as a student, the extreme seriousness and the high mortality of infections about the nose, face and mouth and the necessity for doing minimum surgery, and emphasized the necessity for palliative measures. I think he would appreciate this type of therapy.

As a student in radiology, I am impressed with the necessity of using x-ray therapy about the face, nose and mouth, and especially carbuncles, never to institute surgery, and always to use therapy and in sufficient doses.

A case I had within two years was that of a man with a very large carbuncle of the back of the neck, with the swelling so great it pushed the ear forward. He had walked the floor for ten days with extreme pain, high temperature, and was very restless. He was given 500 r in the course of seventy-two hours with amelioration of symptoms. The fever subsided and no surgery was attempted. That man recovered completely with practically no scars. That is why we should all compliment Dr. Cushway on his very timely paper.

Dr. Cushway (Closing the discussion): In regard to Dr. Trostler's very timely remarks as to dosage, I would like to say our cases of cellulitis of the face and neck were mostly advanced cases, many of which were true Ludwig's angina. In these severe cases we find the results are better with the higher dosage. In other types of less severe cellulitis the dose should be smaller. A dose not to exceed 100 "r" would probably give best results in these cases. In the infections about the nose and upper lip we feel that the larger dose of between 180 "r" to 200 "r" is indicated because of the potential serious possibilities of infections in this location.

As to Dr. Olin's remarks as to radiation being the treatment of choice in cellulitis, I believe our results in the treatment of Ludwig's angina and cellulitis of the face and neck prove that radiation treatment is a specific in these infections. I think radiation treatment should be used in preference to any other form of therapy.

I wish to thank the discussors for their discussion and for the interest shown in this subject. My idea in presenting this paper was to bring into greater prominence the use of roentgen therapy in the treatment of infection. I think roentgen therapy in the treatment of benign lesions and particularly in the treatment of infection has not been given sufficient attention in the literature in this country.

INTRAPELVIC PROTRUSION OF THE ACETABULUM OR OTTO'S PELVIS

LAWRENCE M. HILT, M. D.

SPRINGFIELD, ILL.

It is our belief that intrapelvic protrusion of the acetabulum exists to a more common degree than is generally appreciated. Articles relating to this type of lesion are chiefly in German, and as far as can be learned there are about 80 reported cases to date. There exists considerable difference of opinion as to the correct terminology of this lesion, as well as its etiology. Our interest is chiefly due to one of the cases to be reported. Three case reports represent our contributions to the subject.

Concerning the terminology there has been a multiplicity of terms suggested since Otto's original description in 1824 from a museum specimen. It is interesting to note the article in *Bone and Joint Surgery* which follows Pomeranz's rather exhaustive study is entitled *Arthrokata dysis*, in which a report of two cases is made. It is evident that they are one and the same type as those presented by Pomeranz.

Some authors prefer to call this condition osteoarthritis deformans, destructive coxitis, osteoarthritis protrusion of the acetabulum and intrapelvic protrusion of the acetabulum. It is our opinion that this last named term is the most descriptive and should be universally used.

Confusion exists as to the correct etiology, many workers insisting on the determination of a definite causative factor. There does appear to be the rather definite opinion that the lesion is non-traumatic in character. As Pomeranz suggests, "We are not dealing with a disease entity but with the end result of an inflammatory process." Of the infectious agents which play a role in this lesion, the gonococcus has been assumed by many to be a causative factor. Tuberculosis is also mentioned. Some believe that tabes must be considered.

The radiographic description is as follows: The head of the femur appears slightly flattened or intact. The margins of the head can be well outlined. The femur appears to be displaced inward and slightly upward. There may appear to be some bony ankylosis between the femur and lower margin of the acetabulum. The greater trochan-

ter may appear to be in contact with the upper margin of the acetabulum. There is thickening of the inner margin of the acetabulum. This may be slight or marked, as illustrated by our cases. In one of these cases there are several punched out areas of decreased density in the head of the femur. This we do not attribute to the presence of malignancy.

The case in our series which showed the least amount of bony involvement gave the severest symptoms.

The first case is of exceptional interest, due to the fact that this man was treated for a fractured pelvis for two months. The history is as follows:

A white male, aged 64, was injured by a falling object while at work. He was in the hospital from the date of injury in March until the following May, when he returned to his home. He returned to work November 1 of the same year and has been working since.

Present Complaint: Patient complains of pain in right side of chest and over sacroiliac joint. He states that he sleeps fairly well, that his bowels are regular, that he has to urinate two or three times at night and more often than normal during the day.

Physical Examination: He walks with a decided limp, due to a deformity of right hip joint. There is a marked muscle spasm in lumbar muscles and limitation of motion in back and right hip. Heart sounds normal. Blood count is within normal limits. Urine is negative except for a few hyaline casts which may be termed normal for a man of his age. Blood pressure is systolic 160 diastolic 100.

X-Ray Examinations: Shows advanced osteoarthritis of spine and other joints with an intrapelvic protrusion of the right acetabulum.

Remarks: This patient stated he did not limp before the accident, but, according to acquaintances, he did limp. Since the accident he uses a cane when walking but is able to do his work.

The second case is a male aged 60 who has always been in good health. No venereal history. No history of pain in hip, limping or other than normal gait. Slipped and fell on ice in January, 1936. X-ray reveals in addition to an intrapelvic protrusion of the acetabulum, a fracture of the junction of the inferior ramus of the pubic with the ischium. Since that time he has considerable pain in this hip and some difficulty in walking. It is our experience to have seen cases of this type of pelvic injury who have very little pain or discomfort following the trauma.

The third case gives a history of an injury, December 28, 1935, at which time she slipped and fell on the ice. Before this time she had no difficulty in walking. After the injury she required the aid of crutches. X-ray examination, on January 7, 1936, revealed a lesion of the pelvis which was diagnosed as an intrapelvic protrusion of the acetabulum more marked on

the right than left but of sufficient extent to be termed bilateral.

The patient did not remain in the hospital and a follow up history has not been obtainable.

It is our comment that this condition may exist without the patient's knowledge and produce no disability. After trauma, the lesion may become active and cause pain and disability. It would seem that the first patient, case 1, who was a compensation case, did have increased pain after his accident and that trauma was a factor in the increased pain. It is important that the lesion be correctly interpreted, and this duty will fall to a large extent on the roentgenologist.

A fracture of the acetabulum will not present the well marked thickening. In cases of doubt stereoscopic examinations may be of value.

I am indebted to Doctor Allen and Doctor Zoller of Litchfield for two of the cases presented.

St. Johns Hospital.

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DISCUSSION

Dr. C. H. Zoller, Litchfield: We agree with Dr. Hilt that intrapelvic protrusion of the acetabulum is the preferable terminology for this condition, as it is our belief that the condition has its origin in early life and does not develop after the age of twenty. As to the etiology, it is our belief that the protrusion is caused by either a congenital deepening of the acetabulum or a delay in the ossification of the three bones forming the os innominata, the head gradually pushing the floor of the acetabulum into the pelvis. As it develops so slowly, the patient is ignorant of the condition, and it is easy to see that such an abnormal joint should frequently become the seat of an arthritic process or an infection. All of the cases that I have seen have been in middle life or beyond, and were associated with osteoarthritis.

We do not believe that this intrapelvic protrusion of the acetabulum is an end result of infection of the hip joint but that the protrusion antedates the infection, if present.

Dr. Doub of Detroit has had eight cases, ranging in age from sixteen to fifty-eight years, under his care and nothing in their histories could be found to connect any infectious disease with this condition.

In the last thirty years I have seen a number of cases and had occasion to examine two in the last year. One of the cases you just heard described. The other was a white male 68 years of age, who was injured while at work in a mine by being struck over the crest of the right ilium by a piece of coal. A radiograph of the pelvis showed an intrapelvic protrusion with osteo-

arthritis of the spine and right hip. An x-ray made nine months later showed no apparent change in the condition, although he was still complaining of pain in the right hip.

The history that he gave at the time he entered was that he had never been sick until four or five years ago when he had rheumatism in the right hip and was unable to work for one month. Two years ago he was unable to work for several months because of pain in the hip. He had been working for six weeks when injured.

It is our belief that these men had an intrapelvic protrusion which began to give them pain when they developed their osteoarthritis.

Dr. F. Flinn, Decatur: As Dr. Hilt has pointed out to you, the report of these cases in the literature is very scarce, probably due to our lack of interest or oversight. I do not remember that I have seen a single case of as advanced lesions in the past ten years, as he showed there. I have had several where the appearance was very similar to the last case, where the acetabulum was thinned out but the protrusion was not particularly noticeable. Apparently the walls of the acetabular fossa have approached each other and from the history of the cases shown it appears to me to be a deficiency disease in which the bony structures have become soft and the walls approach each other. It may occur bilaterally or unilaterally. The youngest case which I remember reported in the literature was that of a sixteen year old. I have never seen one that young myself.

Dr. Hilt (closing the discussion): I desire to thank my discussors particularly Dr. Zoller for stimulating interest in this condition. We had an additional case with carcinoma of the stomach we did not include; because the films were not of good technical quality and not centered over the particular area.

However, this man did have a history of being disabled for quite some time, several years prior to his gastro-intestinal study. He died within a few months with carcinoma of the stomach.

THE ELLIOTT MACHINE IN THE TREATMENT OF PROSTATITIS

LEANDER W. RIBA, M. D.

CHICAGO, ILL.

The value of the application of heat in the treatment of many human ailments is well known. As far back as 450 B. C. Hippocrates advocated warm vaginal douches for the relief of pelvic pain, and this treatment was rediscovered by Galen and Celsus about 500 A. D. During the seventeenth century German physicians poured hot lead shot into the vagina for prolonged heat. Early in the eighteenth century intrauterine douches were advocated, but were soon condemned by Emmett, who again advised intravaginal irrigations.

For the amelioration of prostatic symptoms

and infections many mechanical, electrical, and diathermic devices have been advocated and used in the past. The majority of them were either applied externally in the region of the prostatic zone or directly to the prostate by way of the rectum. Hydrotherapy, in the forms of hot sitz baths, hot rectal irrigations and injections has served many useful purposes in the treatment of prostatic disease.

The principal of using a distensible rubber bag with circulating hot water within the vagina was first advocated by Dr. Charles Robert Elliott in 1928-29 and reported by Holden and Gurnee¹



Fig. 1. Showing technic of rolling the Elliott bag before rectal insertion with the "suction on."

in 1931. Since that time many favorable publications have found their way into the medical literature, notably by Graham,² Counseller,³ Mussey,⁴ Preece,⁵ Black,⁶ Revell,⁷ Doan and Simpson,⁸ and others. Most writers have been favorably impressed with the results of acute and chronic infections of the female pelvis. For anatomical reasons, the distensible bag seems more adaptable to the vagina than rigid diathermy electrodes and perhaps less dangerous (Holden and Gurnee) Herring⁹ is the only dissenter among this group of writers and he still favors diathermy treatments. Four vaginal burns with the Elliott bag were reported by Cosgrove and Waters.¹⁰ In 1932, Michel and Traube¹¹ first suggested the use of the Elliott

bag in the treatment of prostatic vesiculitis and prostatic abscess.

Because such good results were obtained in female pelvic infections it was felt that this method merited a trial in the treatment of prostatic disorders. Through the cooperation of the Treatment Regulator Corporation, many different sized bags were devised and used in this series of eighty-two cases. A distensible rubber bag inserted into the rectum and attached to the Elliott machine was the treatment used in these cases. Sixty-seven were clinic and fifteen were private patients. The majority of the former were chronic infections, while the latter were acute.

The clinic patients comprised a group of cases which had been coming to the clinic for a period of one to five years. Their treatments had consisted of massages, sounds, instillations, and other routine measures. Cases were not selected, but for convenience were divided into seven groups:

Group 1. Chronic prostatovesiculitis, nineteen cases. In this group the cell count ranged from 15 to 200 pus cells or more per high power field, with the usual symptoms of frequency, nocturna, dysuria, urgency, and in some cases pain in perineum or back, with or without a cloudy urine.

Group 2. Chronic prostatic vesiculitis with multiple arthritis, sixteen cases. In these patients a diagnosis of chronic infectious arthritis had been made by the orthopedic department. All showed pus in the prostatic fluid, except one.

Group 3. Chronic prostatovesiculitis with contracture of vesical neck, four cases. These patients presented clinical findings of prostatic infection and obstruction without prostatic enlargement. The diagnosis was confirmed by cystoscopy.

Group 4. Adenoma of the prostate with infection, nine cases. These patients presented symptoms of prostatism with definite palpable prostatic enlargement and pus in the prostatic fluid. Cystoscopic examinations confirmed the diagnosis of prostatic hypertrophy.

Group 5. Post-resection, eight cases. These patients had recently been resected transureth-

rally, with signs and symptoms of residual infection and pyuria.

Group 6. Acute gonorrheal prostatovesiculitis, eighteen cases. In this group the infection had been present for two weeks to four months. All the signs and symptoms of an anteroposterior urethral infection with a positive smear were present. The prostates showed enlargement and tenderness, while three cases



Fig. 2. Elliott bag in proper place during treatment.

gave evidence of marked periprostatitis and periseminal vesiculitis.

Group 7. Miscellaneous group, six cases. Acute non-specific prostatovesiculitis, two; acute non-specific epididymitis, one; acute urethrocystitis in a female due to the B. Flexner, one, and chronic posterior urethritis, two.

Technic. A total of 1459 treatments were given to these 82 patients, averaging about 18 treatments per patient. The actual number given to each patient varied between three and 28. As far as possible daily treatments were given to clinic patients while one-half of the private patients took only two to three treatments per week. Patients were instructed to come in with an empty rectum on the day of their treatments. Treatments were given with patients lying on their backs and with thighs flexed. To insert the bag, the motor of the machine was started, the suction turned on, and the bag

rolled as illustrated in Figure 1. The external sphincter was well greased with vaseline, the bag carefully inserted, and the pressure increased from two and one-half to three pounds (Fig. 2). When difficulty was encountered in inserting the bag, both thighs were sharply flexed upon the abdomen. During the initial treatment same patients complained of rectal fullness and distress. When the bag is improperly placed and there is impingement upon the internal sphincter, considerable rectal spasm may be produced (Fig. 3). The first treatment was continued for thirty minutes, with subsequent visits of forty-five minutes to one hour which were usually well tolerated. Three patients refused to continue treatment because of rectal spasms. In two others the rectal symptoms were controlled with one per cent nupercaine ointment. No other patients objected to the treatment. Nine,



Fig. 3. Showing Elliott bag improperly placed. Note impingement upon the internal sphincter.

or 10% did not complete the treatments and their results could not be definitely evaluated.

The temperature of the water in the machine was varied between 110 and 130 degrees Fahrenheit. It was found that temperatures could be increased during each and subsequent treatments, but the temperature was never elevated above 130° F. A few patients were unable to tolerate a temperature above 125° F. A thermometer inserted into the rectum beside the bag

usually reads ten to twelve degrees lower than the machine temperature. No accidents have occurred. The bags were frequently distended before insertion to determine their worthiness. Upon completion of the treatment, suction was again applied and the bag carefully withdrawn. Hemorrhoids may be aggravated during the course of treatments. Proctoscopic examination in five patients, immediately following the Elliott treatments, revealed an excess of mucus and an intense hyperemia of the rectal mucosa. Submucous hemorrhages were not observed.

In the interpretation of the results obtained by this method, we have chosen to be conservative. Patients with symptoms and findings of an infection which resolved completely during the treatments were classified as asymptomatic. Those patients having a high grade prostatitis or marked vesical symptoms which practically resolved during the treatments, were classified as showing marked improvement. For example, with patients of Group 1, when the arthritic pains were relieved and the prostatic infection cleared according to the cell count, but the patient still complaining of some residual stiffness or weakness of the joints, these were classified as showing marked improvement. When symptoms of vesical irritability and prostatic infection were definitely improved but a low-grade residual infection of the prostate remained, they were placed in the moderately im-

proved column. Where some improvement was noted which seemed better than by the usual routine method, they were classified as slightly improved. Nine patients left the clinic (three on account of tenesmus) before the course of treatments were completed, and were classified as unimproved.

The results obtained in Group 1, nineteen patients, ages between 23 and 67 years, were as follows: Three became asymptomatic, one showed marked improvement, three moderate, and seven slight improvement. Five revealed no improvement, and five left the clinic before any change in their condition was noted. In Group 2, sixteen cases with arthritis, one became asymptomatic, six showed marked improvement, four moderate improvement, and five practically no improvement. In other words, eleven out of sixteen patients (or 73%) received moderate to marked benefit from these treatments. Seven patients were relieved of their acute pain, and two, who were almost totally incapacitated before beginning treatment, were entirely relieved. Six still had some residual stiffness of the joints. Four received no relief whatsoever. One was treated at the request of the Orthopedic Department without relief, in spite of the normal prostatic fluid. The cases in Groups 3 and 4 were surgical adenomas and contractures. It was noted that eleven patients obtained some amelioration of their symptoms, and two were un-

	No. Cases	No. discontinuing treatment	Asymptomatic	Marked improvement	Moderate improvement	Slight improvement	No improvement	Rectal spasms
Group 1								
Chronic prostatic-vesiculitis	19	5	3	1	3	7	5	1
Group 2								
Chronic prostatitis with arthritis.....	16	1	1	6	4	1	4	1
Group 3								
Chronic prostatitis with contracture of bladder neck.....	4	1	..	1	2	1	..	..
Group 4								
Adenoma with infection.....	10	1	..	3	5	..	2	..
Group 5								
Post-resection cases	9	1	..	3	3	2	..	..
Group 6								
Acute gonorrheal prostatic-vesiculitis.....	18	..	10	2	3	..	3	1
Group 7								
Miscellaneous	6	..	2	2	1	..	1	..
Acute nonspecific prostatitis.....	2	..	..	..	..	..	..	..
Acute cystitis—female	1	..	..	..	..	..	..	..
Acute epididymitis	1	..	..	..	..	..	..	..
Chronic post. urethritis.....	2	..	..	..	..	..	..	..
Total	82	9	16	18	21	12	15	3
		(10%)	(22%)	(25%)	(30%)	(16.5%)	(20.7%)	

improved (one had a vesical calculus). All but two of these improved cases returned within three months with some recurrence of their symptoms of frequency, urgency and nocturia. Group 5 consisted of nine resected prostatics who had residual symptoms of infection and retention. Three showed marked improvement, three moderate, and three only slight improvement. Of the last three, one had a contracted bladder, one was a cardiac, and in the other insufficient tissue had been removed. All patients showed some reduction in the prostatic cell count, and in five the urine became clearer, but none became asymptomatic. In the acute anteroposterior gonorrheal infections (Group 6) the results seemed to be the best. Ten out of eighteen patients (59%) became asymptomatic. Nine of this group were private patients who had, in addition, local treatments as seemed warranted. Two of these had prostatic abscesses which ruptured intraurethrally. In three, the infection was present for two, four and twelve weeks respectively and had been treated elsewhere with intradermal injections. In these patients findings of marked peri-prostatitis and peri-seminal vesiculitis were noted. These nine private patients received an average of eleven treatments (two times a week to daily). Eight have been followed for at least three months, and in these there has been no recurrence. In the miscellaneous group (Group 7), two cases of acute non-specific prostatitis cleared quickly on three and four treatments each. Both patients have remained well for four months. One case of urethro-cysto-pyelonephritis in a three months' pregnant woman, received marked benefit. After seven vaginal treatments, she became asymptomatic and discontinued treatments. One case of acute epididymitis improved a great deal with seven consecutive treatments, by applying a specially constructed bag to the scrotum.

Summary. Of the 72 patients who were treated and followed, sixteen (22%) became asymptomatic; eighteen (25%) showed marked improvement, while twenty-one (30%) gave evidence of moderate improvement; twelve (16.5%) showed slight improvement, while fifteen (21%) seemingly derived no benefit from the treatments. After 30 to 90 days there were some recurrences, particularly in Groups 3 and

4. Where the prostatic fluid was scanty in the beginning, there was a definite increase in the amount after the third treatment. No consistent rise in the white blood count was noted. There was beginning remission of symptoms after three to five treatments. The local hyperemia produced by the heat causes a physiological increase in blood supply and a probable increase in prostatic secretion. Experimental studies are now being carried out to support this clinical observation.

We believe that this method of treating infected prostates is equal to the fever therapy (hyperpyrexia) now in vogue without its inherent dangers. An insufficient number of cases have been treated to merit conclusive opinions. Recently Lewis¹² reported favorably on the treatment of prostatitis by local heat.

CONCLUSIONS

1. The Elliott treatments are particularly adaptable to acute infections of the prostate, especially where local therapy is contraindicated.

2. Arthritic pains due to a prostato-vesicular focus can be relieved in the majority of cases and the original focus improved.

3. Urinary infections with symptoms due to an enlarged prostate may be improved preoperatively and resolution aided in post-resection cases.

4. Daily treatments, if possible, of thirty, forty-five and sixty minutes, are preferable.

5. This method of treating infected prostates is practical and reasonably safe.

6. The Elliott machine is reliable and very simple to operate.

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Appreciation is extended to Cyril Vance for his assistance in the study of this problem.

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takes place, due to the fact that it is impossible for the patient to make the proper toilet of the antrum through the nasal opening, which is proven by the following histories:

Wm. V., aged 45 years. December 26, 1922.

History: Frontal and temporal headaches radiating to occiput past six or seven years; nasal blocking to right side the past couple of years. Having mucopurulent discharge.

Examination showed large polypi right side with chronic pansinusitis. At the time of the first operation, there was the removal of polypi and a radical operation for drainage of all sinuses; also, removal of considerable necrotic bone. After several months, there was a large window made into the antrum through the inferior meatus. After several months of treatment and cleansings, there was a continuation of a great amount of discharge. Did a Caldwell-Luc of the right antrum and removed a great amount of granulation and polypous tissue. After several months of further treatment, the other sinuses apparently cleared up but patient complained of slight discharge into the throat.

I then made a large opening through the buccal wall of the antrum, observed the lining membrane and, as



Fig. 1. Obturator made of vulcanite rubber, 3/16-1/4 inch in diameter; 3/4 inch in length. The flat or labial portion should be about 6/16 to 7/16 inch in diameter and set at about 30 degrees angle to long axis of the obturator and flattened to about 1/16 inch in thickness.

one would expect, it was far from normal. At that time, I put in a metal obturator, cast by a dentist friend, the purpose of which was to make it more convenient for the patient and that he might treat the antrum himself. Outside of swallowing the plug once or twice, there was no difficulty in taking care of the antrum. At the present time, he is not wearing an obturator and apparently is in good health.

Mrs. M., aged 42 years. November 15, 1926.

History: Complained of severe headaches and pain over both antrums.

Upon examination found both antrums infected. Patient had been treated for recurrent antrum infections by a colleague for four or five years, during which time opening was made into the inferior meatus and antrums irrigated, after which she would apparently clear up.

I reopened the antrums through the meatus and irrigated. Patient would improve for a time but would have a recurrence. After a year of this type of treatment, I did a Caldwell-Luc and cleaned out the infectious material and granulation from the antrum. The patient apparently cleared up, but returned the following winter complaining of a bronchial cough, which the internist thought was of a nasal origin. Upon examination, the nose did not show any more signs of

USE OF OBTURATOR IN TREATMENT OF CHRONIC ANTRUM INFECTIONS

G. C. OTRICH, M. D.

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In the surgical treatment of chronic infection of the antrum or maxillary sinus, the radical Caldwell-Luc or one of its many modifications, is supposed to be the last word. Even after these radical antral-nasal operations, we still have with us the patient with the chronic antrum, complaining not particularly of any pain in the antrum, but with the constant postnasal dropping and also the postnasal, tracheal and sometimes bronchial disturbances, which are generally constant following any chronic sinus infection.

The reason for this is that with all the care possible, at the time of operation, it is almost impossible to get the nasal antral opening level with the floor of the sinus, though it may seem to be so at the time of the operation; but when healing takes place the floor of the sinus will be several m.m. below the artificial opening. It is here where the mucopurulent accumulation

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infection than one would expect to find in anyone operated on so many times before.

Upon washing the antrum, very slight flaky mucopurulent sediment was found. After numerous washings, the cough cleared up. I stopped the treatments and the bronchial cough returned. We then decided to put in an obturator in the buccal wall so that she might keep the antrum free from infection. This was done on both sides and she has had no complaints for a number of years, as far as her sinuses or bronchial infections are concerned.

Mr. F. F. M., aged 54 years. July 10, 1930.

History: Patient complained of frontal radiating temporal headaches; heavy mucopurulent discharge past several years. Had pneumonia five or six years ago. Hasn't been well since.

Upon examination found sinusitis and atrophic rhinitis. Irrigation showed both antrums were badly infected. Made large openings into inferior meatus in both antrums for drainage. Right side cleared up; left side continued to drain.

Prepared to do a Caldwell-Luc operation on left side. Opened through buccal wall, found very thick, edematous membrane with polypi in antrum. I removed them and decided against doing a Caldwell-Luc, I would put in an obturator and see what happened. He apparently cleared up, and when I wanted to remove the obturator he objected, due to the fact that he probably would neglect cleansing the antrum or nose, and the laryngeal irritation and cough would return.

Four years later, he returned with an infection of the right antrum and requested that instead of doing a lot of antrum punctures and irrigations, as he expressed it, he wished I would put a plug in that side and be done with it. This I did, and now have a satisfied patient.

Mrs. McN., aged 50 years. August 10, 1933.

History: Dates back about fifteen years. Had submucous resection, middle turbinate and antrum-ethmoid operations right side; tonsils removed; also a Caldwell-Luc operation of the right antrum by a man of unquestionable ability. Had been directed to spend the winters in New Mexico, which she had done for a number of years. When the depression came along and it was impossible for her to go to New Mexico, her bronchial cough and headaches of a general type returned.

Upon examination, there was very little evidence of secretions within the nose but there were signs of irritation in the upper pharynx. The x-ray pictures and transillumination showed the apparent thickening of tissue on that side. Upon irrigation of the antrum, I found a very large window in the inferior meatus. Washings showed slight flaky mucopurulent material. After several treatments, her condition considerably improved. In about a month, however, she returned with the old symptoms somewhat exaggerated. As the patient lived considerable distance from the office, I recommended opening the antrum through the buccal

wall, and the use of the obturator so that she might give it proper care. To this she consented.

When I opened the antrum to make observations of the lining, it was apparently in a fairly healthy condition, with the exception of the floor near the meatal opening. This area was the part that was irritated and not allowed to heal by sediment collecting.

The approach to the antrum is made on the level of the alveolar floor of the sinus through

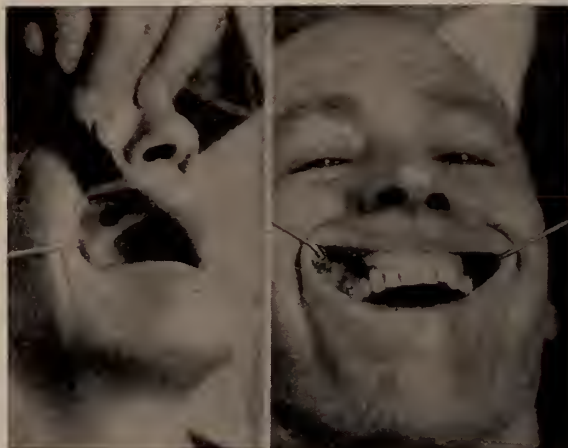


Fig. 2. Obturator where patient is wearing upper denture.

Fig. 3. Obturator, both sides. Patient has full compliment of teeth.

the canine fossa, making the opening through the buccal wall sufficiently large for a thorough investigation of the antrum, and also for the purpose of removing any polypi or granulation tissue which might exist.

The purpose of going into detail, as far as the drainage through this opening is concerned, is for the purpose of saving the operator some of the embarrassing situations which I have had befall me.

Do not try to make the opening anterior to the canine eminence, because the bony wall is very thick, and the angle of approach to the antrum makes it difficult to fit the obturator. Use care in making the incision and handle the tissues as gently as possible so as not to traumatize the nerve structures. Also, the same care must be observed when making the bony opening, because the loop of the anterior-posterior alveolar nerve with its branches is in this area. If this nerve is cut or encroached upon by scar tissue, there will be numbness of the teeth on that side, or worse, a tickling sensation in the tip of the nose as though something crawling. This is most annoying to the patient,

who in turn will be annoying to you. This, however, is more likely to occur in the other radical operations. This sometimes occurs following extractions, or extensive root canal fillings of the central incisors.

For drainage, I use a piece of tubing one fourth to five eighths inch in diameter, about an inch long, with a medium sized safety pin put through the end, and bent corresponding the curve of the maxilla. This is left in place for several days to a week, until all of the swelling of the soft tissue has subsided; also irrigating through the tube cleansing the antrum. Do not try to place in position the permanent hard rubber obturator at the time of operation; because of the post-operative swelling and the large opening there is a possibility of the obturator, slipping into the antrum and causing you much embarrassment trying to recover it. Do not use the bulging end of a self-retaining catheter; sometimes they pull off and are difficult to get out. The permanent obturator should be made of vulcanite rubber.

I have tried the velum rubber, but it is not satisfactory. These obturators can be made by a dentist or dental laboratory as per illustration (Fig. 1) and description as follows: $\frac{3}{8}$ - $\frac{1}{4}$ inch in diameter; $\frac{3}{4}$ inch in length. The flat or labial portion of the obturator should be about $\frac{6}{16}$ to $\frac{7}{16}$ inch in diameter and set at about 30 degrees angle to long axis of the obturator and flattened to about $\frac{1}{16}$ inch in thickness. Generally, these have to be fitted and the angle changed, which can be accomplished by heating the obturator at angle and bending to fit.

In cases where the patient is wearing an upper denture, the denture is made to fit over the head of the obturator. (Fig. 2) In some cases where the patient had an upper denture previous to operation, I made the permanent opening sufficiently high so that the flat portion of the obturator fit down over the buccal rim of the plate.

The patient is instructed in the technique of irrigation of the antrum which should be done every day, or as often as necessary to keep the antrum free from the accumulation of pus. There is no need for concern about the question of these openings. I have patients who are still wearing the obturator after seven or eight years and are perfectly happy and they

have been free from their symptoms, due to non-exacerbation of their infections. I have had three cases return at various intervals, at which times I introduced a Holmes pharyngealscope and made a survey of the lining of the antrum and noted its apparent condition.

As you will note, all these cases have had advantage of conservative and other types of antral surgery, with the exception of the second operation of Mr. F. F. M., which was done at his insistence. They have all been very faithful in performing the toilet of their antrum and nasal passage, and for all intent and purposes are free from their annoying symptoms and are perfectly happy and satisfied with the results.

DISCUSSION

Dr. O. E. Van Alyea, Chicago: Dr. Otrich has described a procedure which has proven satisfactory to a number of his patients. Any method of therapy which will give such a result is welcome to the rhinologist. His cases are mostly of a selected group, those patients who had failed to respond to other methods of therapy. They were desperate cases largely, and anything he could do to improve the situation was welcome to them. It seems unfortunate, however, that the rhinologist should start at that point with some of these chronic sinusitis cases. There should be a method of curing permanently and definitely maxillary sinusitis. His patients are not cured; they still have their disease. They are not complaining, nevertheless, the condition is still present. I should like to ask Dr. Otrich if he in his technic includes a counter-opening into the naso-maxillary wall or does he presuppose such an opening due to the fact that these cases have been operated on previously. Several years ago a similar operation was described by Kuster, and is known by his name. The obturator was placed in a similar position in the antrum. The opening was made in the wall of the antrum for the purpose of observing the lining and removal of pathologic material, and the opening was made permanent by the use of this obturator. Shortly after that the Caldwell-Luc operation came into vogue and the obturator method was discarded. Professor Hajek makes this comment, "the Kuster method has not fulfilled great expectations. The use of the rubber stop makes it unsatisfactory for the patient. If the patient removes the obturator for a short time the opening closes. It acts as a foreign body as long as it remains in the antrum, the secretion does not cease, and from time to time there is an exacerbation. The method has been entirely abandoned." This particular technic did not include a nasal opening.

In our experience we find the Caldwell-Luc a satisfactory operation when it is indicated. In the cases where we have a simple chronic sinusitis we first attempt to clear up the situation by the so-called win-

dow operation. We follow the Hemstead technic described in 1927, which calls for fracture of the inferior turbinate, exposing a large bony area which can be resected and which permits a rather extensive opening in the naso-antral wall. Through this opening an inspection of the lining is possible, and removal of the diseased structures is also possible. That, it seems to me, is the situation in modern rhinology. The window operation should be given a trial. The Caldwell-Luc, a more radical procedure, is reserved for cases of suspected malignancy, bone involvement, and in those cases where there is extensive pathology of the membranous lining, when it is deemed advisable to remove an extensive portion if not all of that lining. The literature is filled with articles by various operators who are following that plan. Goodyear reported the results of eighty-four cases on which the window operation was performed. Seventy-eight were successful while six required reoperation. Williams last year reported the results of 200 such operations which were quite satisfactory. They have followed this plan at Rochester—the window operation in most cases, reserving the Caldwell-Luc for the other type.

I have not seen any of Dr. Otrich's cases, consequently am not qualified to pass on them. If he has a method that is satisfactory I think he should continue to use it, and it may be that cases that do not respond to other treatment would get relief, but I think it should be done only as a last resort. I do not think it should be tried before giving the window operation a chance.

Dr. George Woodruff, Joliet: I have had no experience with this type of operation at all. Of course to me it at first sounds not very attractive, the principal objection being the wearing of a continuous foreign body, and also maintaining a bucco-antral opening. However, I think Dr. Van Alyea has sized up the situation very well; if you have cases which you have given all the usual well-established treatments, and still they do not get well, you have to try something to relieve these patients, and if Dr. Otrich has succeeded here I think he has accomplished something for his patients and should continue to use it. I would rather hesitate to do it myself, but there may be cases in which it is applicable.

Dr. G. C. Otrich, Belleville (closing): In answer to Dr. Van Alyea's question, these cases have all had window openings, permanent openings through inferior meatus, and as he stated, there is an accumulation of mucopurulent material on the floor of the antrum, which you will find in every old chronic case, and this method is what I used as a very last resort.

In speaking of the pitfalls to be encountered in doing this, I think I have had them all. The obturator is made of black rubber, not red, because I have found that red rubber is very irritating in some cases. The obturator is no more irritating to the patient than the wearing of a plate. That is absolutely positive, because the mucous lining fits around it and continues into the antrum opening, and I have found with the black rubber obturator, well-fitting, is no more irritating to

the patient than wearing false teeth. As I said, it is a method of last resort. These patients, whose cases I have described are people who live some distance from the physician, and they were taught to make a perfect toilet of the antrum.

SYPHILIS—A PROBLEM IN PRENATAL CARE

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CHICAGO

Syphilis, a very important problem in all fields of medicine and surgery, is especially important in obstetrics because the untreated, pregnant, syphilitic woman may infect another human being—her baby. This is unfortunate in view of the fact that the pregnant woman with syphilis is exceptionally amenable to skillful treatment. She and her child can be protected by measures which would hardly prove curative under ordinary circumstances. Prenatal syphilis offers the maximum opportunity to practice preventive medicine, and with a very small expenditure of energy on the part of the physician in endeavoring to eliminate syphilis in the newborn a tremendous amount of human suffering may be prevented.

We are unable to estimate exactly how much prenatal syphilis exists nor how we are progressing in its eradication, as may be done with other contagious and infectious diseases. Our Public Health Departments forbid and actually prevent the transmission of scarlet fever, diphtheria, smallpox and the like. We have no law permitting them to inquire whether a pregnancy will result in a syphilitic child; yet all will agree congenital infection is transmission of a contagious disease with the victim deprived of all opportunity to escape. Our attitude toward this disease is quaintly medieval. Women of the better classes shudder at the mere mention of the word; the physician shrouds the diagnosis in a number or perhaps never even reports its occurrence to the health authorities; and neither health department nor physician make more than a gesture toward seeking out the source of the infection. Therefore, despite scientific progress manifested in the exceeding efficiency of the Wassermann in detecting syphilis and the effec-

tive therapy of the arsenicals, mercurials and bismuths, syphilis remains a most active and widespread disease, striking down one in every ten adults. Approximately one per cent. of our population is born infected with syphilis; among the underprivileged the percentage is higher than among the economically able, and the incidence in the colored, 15%, as compared to the whites is a challenge to our social consciousness. In the State of Illinois, where 110,000 to 120,000 babies are born annually, we add an estimated 1,000 congenitally infected infants to our population each calendar year. We permit this when we know that with proper prevention at least 75% of these infants could be born apparently healthy and non-syphilitic.

Fetal and neonatal deaths among syphilitic mothers is much greater than among non-syphilitic mothers; and among children born alive of syphilitic mothers both the mortality and morbidity rates are much higher than among children born of non-syphilitic mothers. Sylvester,¹ in 1926, published a resume of congenital syphilis in Boston, taking for his material a group of infants with clinically recognizable syphilis studied in a 25-year period. He found that from 1901 to 1914, before the Wassermann was used, there was a mortality of 85% within the first year of life. From 1915 to 1919, when the Wassermann became generally available and salvarsan first came into use, the mortality dropped to 33% within the first year of life. The Wassermann test uncovered subclinical syphilis, which had not been detectable previously. From 1920 to 1925, with better diagnosis, better therapy and organized clinics with social service, the infant mortality in the first year of life dropped to 21.5%. The astonishing drop from 85% to 21.5% mortality demonstrates the value of the Wassermann test and the arsenicals. Sylvester further studied the morbidity of infants in these three periods and reported that a syphilitic child is apparently more susceptible to colds, otitis, pneumonia and other infections than is the non-syphilitic child. He estimated the morbidity as 85% in the 1901-1914 group; 50% in the 1915-1919 group; and 35% in the 1920-1925 group.

On the basis of these findings alone, which probably can be duplicated in other large clinics,

we would be making a long stride forward if we could require that every birth certificate in this country be accompanied by a Wassermann report. Unless we do this we are not making full use of scientific progress. While a negative blood does not always mean there is no syphilis present, a Wassermann, if made early enough in the pregnancy so that the mother may be treated, will aid materially to weed out the syphilitic child from our population. Prejudiced groups undoubtedly will arise to object that the enforcement of such a law would infringe upon their constitutional rights, entirely overlooking the fact that the child infected before its birth is born to a life shorn of rights and opportunity. It has required much labor on the part of interested groups to secure in the majority of the states the passage of a law requiring the Crede treatment to prevent blindness in the newborn, and unquestionably a huge and painstaking expenditure of effort will have to be made to educate the public to the necessity for a routine blood test on all of our pregnant women. Nevertheless, wholesome propaganda could effect this. In the Scandinavian countries, where a routine blood test on all pregnant women is required by law, they have reduced congenital syphilis to about 400 cases in a population of six million.

It is routine in the majority of charity hospitals to make blood tests on obstetrical patients, and also in a few private hospitals. Paradoxically, it is the private patient who is neglected in this respect. Her obstetrician dislikes to suggest anything so unpleasant as syphilis, with its social and moral implications, and relies upon his or her physical examination to indicate the necessity for a Wassermann. This is not practicable because syphilis in women is exceedingly difficult to detect. In most women the stigmata are very likely to be clouded so as to elude the eye of even a trained syphilologist. We should bear in mind that there is a distinct difference in the manifestations of syphilis in the male and the female, and additionally that there is a protective influence exerted by the pregnancy against the development of active manifestations. In the child bearing years a woman may show absolutely no clinical symptoms, have a negative Wassermann and yet the fetal tissues of her progeny may harbor spirochetes in enormous

numbers. The infected child may be the only frank diagnostic fact in the entire picture. Certainly syphilis has a milder quality in the female and tends to become latent in her during the childbearing period, the positive Wassermann and perceptible lesions appearing with the approach of the menopause. This suggests that the ovarian and placental hormones exert an influence that is at least temporarily beneficial. Warthin,² in commenting on the difference in the pathologic picture in the male and the female, stated:

"It might be that the *Spirochaeta pallida* is a pathogenic descendant of some harmless spirochetal form inhabiting the female body ages ago, and that in consequence woman establishes a more comfortable partnership with this organism than does man. Such a theory does not, however, explain a higher degree of immunity of the woman during the period of childbearing, and the apparent increase of immunity as the result of conceptions. Whatever may be the explanation of woman's relative immunity to this infection, whether one or several of these factors contribute to it, the important fact remains that syphilis manifests itself in the female almost as if she were another animal species, and that about this sex difference in reaction to infection with *Spirochaeta pallida* there center not only grave sociologic problems but also the most difficult practical problems in the diagnosis and treatment of syphilis."

Permit me, therefore, to leave with you the knowledge that syphilis cannot be detected in a pregnant woman by means of a physical examination alone.

The immunity to syphilis enjoyed by the childbearing woman is not transmitted to her child. The fetal tissues afford a most fertile soil for the development of the spirochete, and it multiplies to an extent never approached in the tissues of an adult with acquired syphilis. The primary stage is lacking and the process resembles the tertiary stage in the adult except that we find more treponemata in the tissues of the fetus and the infant than in the adult.

The large placenta, pale, thick and friable with well marked cotyledons and thickened membranes, weighs almost a quarter as much as the fetus. Examined microscopically we find vascular changes that lead to curious modifications of the villi. The blood vessels of the villi show periarteritis, arteritis, and even obliterating endarteritis, and the individual villi become thickened and bulbous due to an over-

growth of connective tissue cells. The placenta, however, is the site of an intense reaction against the parasite. Brindeau and Manouelian³ studied the placenta of an apparently healthy woman twenty years of age, delivered of a syphilitic child. Histologic examination showed only a few typical spirochetes in the veins of the chorionic villi. There were, however, enormous numbers of treponemata in the phagocytes of the veins, some of them still recognizable, but more of them in the form of debris. In the polynuclears and mononuclears there were fine granulations from disintegrated treponemata. There were no degenerated spirochetes free in the veins; all were enclosed in the phagocytes where there were a series of intermediate forms from typical parasites to fine granulations.

The fetal lungs show proliferation of connective tissue and round cell infiltration in the alveolar walls. There is a perivascular and peribronchial infiltration of round cells and connective tissue, and there are spirochetes galore in the epithelial debris which fills the alveolae. These changes account for the pale, firm patches of pneumonia-alba in the lung which fails to function at birth, or, if it functions at all, does so very inadequately.

The liver shows retarded development. At birth there still persists the appearance of an active blood forming organ, which is a function only in fetal life. The liver is enlarged, firm and tough, and may be one-tenth to one-eighth of the total body weight. The capillaries are wide and distended with groups of blood cells of all sorts. A network of connective tissue passes in and around the liver cells, and in some cases the proliferation of connective tissue is so extensive that there is pressure atrophy and necrosis of the liver cords. The normal hepatic architecture is destroyed, and one sees scattered clumps of liver cells separated by much vascular fibrous tissue and abundantly infiltrated with round cells. Everywhere the connective tissue invades and conquers. The pancreas and spleen are enlarged due to a hyperplasia of the normal cellular elements.

The bones show marked changes at the epiphyseal line of the long bones, with ragged areas of bone formation, round cell infiltration and proliferating connective tissue. This is espe-

cially true at the distal ends of the femur, tibia and radius. The periosteum and perichondrium or thickened. Thus the normal function of bone formation is disturbed, and we can make use of this fact in an infant in whom we suspect syphilis but are unable to prove it clinically or by blood test if we will make an x-ray of the long bones.

The changes in the kidney are not characteristic but frequently there is imperfect development of the glomeruli with areas of atrophy, fibrosis and round cell infiltration.

The vascular changes in the placenta limit the nutrition that may be carried to the fetus; the spirochete stimulates the formation of pathologic tissue in the fetus; and we have an organism attempting to develop at a rapid rate deprived of its normal, essential, adequate nutrition and subject to a toxic influence of overwhelming proportions. This short resume will serve to indicate how abundantly the spirochete flourishes in the fetus, and, because of the associated seeming well being of the mother, contributes to the problems of prenatal care.

The Co-operative Clinical Group⁴ studied pooled records from five large clinics to determine the outcome of pregnancy in syphilitic women, and the conclusions of the group are significant because of the large number of women observed in clinics of recognized standing. They studied 3,817 syphilitic women under treatment or observation for six months or more. Six hundred and three of these women had 922 pregnancies after their syphilitic infection, 607 of these pregnancies form the basis of their study. Using their findings as guides I wish to point out a few very important rules for the prenatal care of the syphilitic woman.

1. *Negative Blood Reaction.* A negative blood reaction is important. While insufficient in itself to insure a living, non-syphilitic child—a negative reaction never guarantees the birth of a normal child—80% of syphilitic women with a negative Wassermann will give birth to apparently healthy infants. I say “apparently healthy” because all children born of syphilitic parents should be followed for two years; there is an incubation period of apparent health after birth before symptoms develop in the infant.

2. *Stage of the Mother's Infection.* If the

mother's blood is negative the stage of her infection may not be important, but if her blood is positive the stage assumes vast importance. The later in the disease is the mother before conception takes place the less chance there is of syphilis in the child. It is the young mother who is our chief concern; she is most likely to be positive. The duration of her infection is short and she has had less time to receive treatment and augment her natural immunity.

3. *Source of Syphilis in Women.* The majority of young women are infected by husbands who acquired the infection before marriage, though, of course, it does not follow that because a woman who has syphilis is married that she has been infected by her husband. Stokes,⁵ says: “Fournier found that 67% of 208 women were infected by men who acquired the disease before marriage; Bulkley found that 82% of his syphilitic women patients were married; Blaisdel (Boston) found that 79% of his syphilitic women patients were married and Solomon 76%. Fournier's analyses showed that 75% of his syphilitic married women acquired the disease from their husbands. The Solomon's from a critical examination of their experience, estimate that 80-90% of the husbands acquired syphilis before marriage. Our own experience with a rural American clientele indicated that more than 90% of sexual exposure in men is ante marital and that this is the source of familial infection.”

4. *Age of Infected Women.* The Clinical Group⁴ show that the majority of the women they studied had acquired the disease before thirty years of age:

	16 to 29 years	30 years and over
White females	79%	21%
Colored females	88½%	11½%

A visit to any large venereal disease clinic will demonstrate the accuracy of these figures because most of the patients are in the early twenties.

5. *Optimum Time in Pregnancy for Treatment.* Treatment should be begun early in pregnancy, preferably before the fifth month. The earlier treatment is instituted the better the prognosis. In the Clinical Group⁴

167. syphilitic mothers treated *before* the 5th month gave birth to 78% living apparently non-syphilitic babies.

218 syphilitic mothers treated *after* the 5th month gave birth to 60% living apparently non-syphilitic babies.

The best results, therefore, are obtained by giving adequate treatment and starting early enough in the pregnancy and continuing to the termination thereof. It should be added, of course, that if the disease is discovered late in the pregnancy, some treatment is better than none.

6. *Treatment Necessary in Each Pregnancy.* Treatment should be given throughout each pregnancy. It is the treatment during the present pregnancy that influences the outcome. A mother may have had adequate treatment in the past, yet it is possible for her to be a carrier of the parasite and thus a possible source of transmission of the disease to the fetus. It is a safe rule to follow that every mother with syphilis, no matter how much treatment she has received in the past, no matter what her physical condition or the status of her present Wassermann should receive early and adequately therapy during each pregnancy to insure the birth of living, apparently non-syphilitic children. Gammeltoft⁶ of Copenhagen has shown that a syphilitic mother may be delivered of a syphilitic child many years after her infection. Other workers also have shown this to be true. Again it is necessary to remind ourselves of the difference in the behavior of syphilis in the male and the female. A man skillfully treated for syphilis should reach a non-infectious state in five years; a woman so treated may violate all rules with reference to transmission of the disease to her children. It is a well known fact that a syphilitic individual, no longer capable of transmitting the disease to a sex partner, may as a donor in transfusion give the disease to another. Likewise the pregnant woman may transmit the infection through the placental blood to her unborn child long after she, herself, has built a resistance to the disease and also has become innocuous to her sex partner. The syphilitic mother must be considered as a potential reservoir of infection for the fetus she carries, even though she can no longer transmit the disease to others. Given a woman with a negative Wassermann in seemingly good health, a history of adequate treatment in the past, and the mother of an apparently healthy child, we might find her a most reluctant patient for therapy in a subsequent pregnancy, and a phy-

sician might be tempted to consider further treatment superfluous. Most emphatically she should be treated during the new pregnancy, and during every pregnancy, regardless of treatment in the past and whether her infection is of long or short duration. To pursue any other course is to assume unjustifiable risks.

I believe we frequently are misled by what we term "latency" in a syphilitic patient. The marked self-resolving power of the disease and the effectiveness of present day therapy in rapidly obliterating symptoms leave the patient outwardly free from gross signs of the disease. Nothing is more treacherous than this seeming well being. In the latent syphilitic, man or woman, we must visualize the spirochete hidden in silent areas, temporarily inaccessible to therapy, but nevertheless irritating the tissues and producing a persistent rearrangement of the microscopic anatomy. When disequilibrium between the spirochete and the immune processes of the body takes place there is a redistribution of the spirochete by the bloodstream, or a spirochetemia, with minor explosive phenomena expressed in transient anemias, periosteal infiltrations, gummata, nervous symptoms of varying degree, etc. The case report listed below will demonstrate the rise and fall of spirochetal activity in the life of one woman inadequately treated, so that you will appreciate the necessity for treatment during each and every pregnancy regardless of the blood reaction or the duration of the infection.

Mrs. H. P., aged 40 years, married at 19 years to a man infected with syphilis 6 months before and treated for 3 months only.

Pregnancies:

1st—Miscarried at 3 months.

2nd—Stillborn.

At 22 years of age mother received antisyphilitic therapy for 6 months.

3rd—Born alive, died at 6 weeks.

4th—Born alive, now 16 years old and being treated for interstitial keratitis.

5th—Born alive, now 13 years old; Hutchinson's teeth and saddle nose.

At 29 years of age the mother received intensive antisyphilitic therapy for one year.

6th—Born alive, now 10 years old, and apparently normal.

7th—Born alive one year ago, and died at 8 weeks.

In this woman in whom the immune forces were sufficiently in control so that she gave birth

to an apparently healthy child—the sixth, the following, or seventh pregnancy, ended as fatally as the first one. Active treatment during each pregnancy would have changed this picture from one of great human wastage.

7. *The Pregnant Woman's Ability to Tolerate Treatment.* We come now to the problem of whether or not the pregnant woman will tolerate treatment with arsenicals, mercurials and bismuths when her kidneys and liver are under the maximum strain of the pregnancy. There are records to show that in all recognized clinics intensive treatment is being carried out successfully and with no danger to the woman. The Co-Operative Group⁴ statistics demonstrate that the pregnant woman experiences fewer reactions than does the non-pregnant woman. Arsenical dermatitis was twice as frequent and icterus five times as frequent in the non-pregnant as in their pregnant group. Their results, as follows, are very convincing:

REACTION TO ARSENICALS GIVEN BY THE CO-OPERATIVE GROUP

	Treatments Given	Reactions
Syphilitic women, pregnant.....	4,581	82
Syphilitic women, never pregnant..	55,066	1,324

Francois Mauriceau,⁷ one of the leading French obstetricians of his day, reported as long ago as 1660—or almost three hundred years ago, how a determined woman demonstrated the feasibility of vigorous treatment for syphilis in the pregnant woman, and I quote his quaint tale as an interesting item of medical history not at all out of place in our discussion of 1936 methods:

"I know very well that many will not easily be persuaded, but that either it is impossible to cure a woman of the Pox whilst she is with Child, or that she and her Child cannot undergo the remedies without inevitable danger of death: However, the experience I have of it myself, makes me to be of another opinion, which I am willing to communicate for an example in a like case. In the year 1660, when I practis'd Midwifery in the Hostel de Dieu at Paris, a young wench, not above 20 years old, came thither to lie in of her second child, that had had the Pox before ever she conceived the first time, and after miscarried of a dead child, rotten with the Pox: therefore, being big this second time, and perceiving the accidents of her disease to augment more and more, she concluded there was no hopes this great-belly would succeed any better than the first, because she had all over her body, especially upon both her breasts, very many malignant ulcers, which encreased daily;

and fearing it might turn to a Cancer before her reckoning was compleat, being but three Months gone, she resolved to submit to a thorough cure then, and to hazard her life in that condition to save her child's, having no other hopes to effect it, nor being able herself to restrict the growing disease. She acquainted three or four chirurgeons both with her disease and design, not at all concealing her great-belly; who for that cause would not undertake her (altho she was fully resolved upon it, and promised to pay them well), telling her that their conscience would not suffer them to do it in the condition she was in, and that it would be better she would patiently submit to it as well as she could, till was brought to bed, and then they would very willingly undertake her: But when she found none would undertake her, unless she concealed her great-belly, which was not hard to be done, being but 3 months gone, and believing there was no better an expedient; she met with another (to whom she mentioned nothing of her great-belly) that put her in the ordinary course, as if there had been no conception; and by five or six reiterated frictions of the ointment, which followed her very plentifully five whole weeks, so that she was well and perfectly cured, without leaving the least ill accident behind of her disease. When she was almost recovered, and that all had succeeded well, she told her chirurgeon she was four months and a half gone with child, (for she was 3 months when she came to him, where she lodged 6 weeks intire, without having it in the least perceived) which at first he could hardly believe, but perceiving her belly rather grown bigger than less, during the evacuation the physik had made, he was immediately assured of the truth of it: She informed him, that the reason why she had concealed her great-belly, was the refusal of four chirurgeons (to whom she confest it) made to take her in hand. From the time she was cured she suffered not the least inconvenience during the remainder of her time, except a little want, because all the money she had was given the chirurgeon for her cure, which made her come to the Hostel de Dieu to lie in, where I delivered her of a child at the full time, as big, fat and healthy, as if the Mother never had the least touch of that disease in her whole body; and which was very remarkable, the burden (which is a part very susceptible of the least impression of the woman's corrupt humours) was as neat, fair and ruddy as could be imagined."—(Dr. Herbert Thoms' Classical Contributions to Obstetrics and Gynecology.)

A discussion of prenatal syphilis is incomplete unless we devote a part of our time to the public health aspect of the problem. It is useless to discuss the treatment of a disease and ignore its prevention. The control of venereal disease has been considered a major health activity since the close of the war—1918; and we have at our command remedies that absolutely will render syphilis non-infectious. Despite these two facts this disastrous disease con-

tinues to strike down more victims than scarlet fever, tuberculosis, and even the dreaded auto accident, and the great majority of these stricken people are between fifteen and thirty years of age. I believe if we could make all the facts known to the public we could do away with the secrecy which surrounds this disease. In the education of the public, the radio, press, pamphlets and books have been the avenues for suitable publicity; it has been through these media that scientifically accurate preventive measures have attained to a degree of usefulness in a relatively few years. At the present time venereal disease propaganda is in the position of giving offense. A syphilis control program cannot meet with the success which has characterized other campaigns of disease prevention unless we can mold public opinion and disseminate the necessary information. If expectant mothers could be made to realize the necessity of a blood test, only a small minority would fail to demand it. In February, 1935, The Department of Health of New York City, co-operating with the health and welfare agencies of the city, made an effort to further knowledge concerning congenital syphilis, and to arouse a greater appreciation on the part of the public to the fact that the continued death of babies from syphilis is inexcusable because it is preventable. They asked physicians to make routine blood tests on all pregnant women under their care. They employed lectures and radio, distributed leaflets, and carried whole pages of information in the newspapers. Such a campaign once a year in every city having a population of 50,000 or more would reduce congenital syphilis in a very few years.

Summary: Syphilis remains active and widespread despite the Wassermann and arsenicals. Approximately one per cent of our population is infected at birth.

We would be making a long stride forward if we could require a routine blood test on all pregnant women.

Syphilis has a milder quality in the female and tends to become latent in her during the child bearing period; the fetus, on the other hand, enjoys no such immunity.

A negative blood reaction is important in the pregnant woman; also the stage of her infection. Treatment should be begun early in preg-

nancy, preferably before the fifth month; treatment is essential in each pregnancy; and the pregnant woman tolerates intensive therapy very well.

Wholesome propaganda to acquaint women with the necessity for a blood test in pregnancy is necessary.

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THE RADIOLOGIST AND THE HOSPITAL

W. M. HARTMAN, M. D.

MACOMB, ILL.

My offering today is a brief and direct discussion of a serious situation in the Medical Profession. This situation is one with which you all are familiar, and perhaps from which some of you may have suffered. It is, in fact, becoming more and more "old stuff" to Radiologists.

Much has been said and written about the dangers that threaten the future of Medicine, especially from political, social, and economic sources outside our profession. Such attacks are needed, and should be expected as a part of the natural growth and evolution of a profession. It is very much to the credit of Medicine that we have been left so much to ourselves to work out our own problems. True, the dangers outside the ranks need to be appreciated; but, I feel that we must not overlook the more serious threats that arise from within our ranks. What others are trying to do to us is not as important as what we are actually doing to ourselves.

Since 1900 the technical advances in the treatment of the sick have been so rapid and the demands for institutional care, naturally resulting therefrom, have been so great that much

hospital building has happened. In the hospitals themselves the technical demands for specialized service in clinical, pathological, operating room and x-ray departments began to require more and more help and more and better equipment. And competition and showmanship also had its part.

Gradually emphasis began to be placed more and more on equipment and machines. Technology was asserting itself. Less emphasis was placed on skill, training, personality and ability. There was less mention of the man behind the machine. Down our way we had a man who always boasted the possession of "the biggest x-ray machine outside Chicago." Who would hunt a surgeon because he had the most expensive operating table east or west of Rochester?

The importance of hospitals in the present day general scheme of things medical is so great that the physician is unable to practice successfully without hospital connections. This is especially true of recent graduates who are inclined to lean too heavily on technical assistance.

From its very nature much radiology must be done in hospitals. This means large investment in space and money and the installation of elaborate and complicated machinery. The machine tends to outshine the man. The man is dependent on the machine. The institution is back of the machine. The institution is a lay organization working on a commercial basis; and it is not held by the bonds of Medical Ethics. And right here is where things crack up, and exploitation of the Medical Profession begins.

The specialties of surgery, internal medicine, obstetrics, pediatrics, urology, and eye, ear, nose and throat, all older more secure and independent, are inclined to feel, I fear, that there is a vital difference between their position and that of the radiologist. The patient is their patient. They are responsible for diagnosis and treatment, and for ultimate success or failure. The radiologist is some kind of a genius in mechanics, electricity, and photography. His contact with the patient is limited and at the request of a referring man. Therefore he is more interested in the technical problems involved than in the patient. He is more technician, than doctor, to the rank and file of medicine. So

why bother with what is happening to him? What harm can come of it?

The law has upheld the medical profession that only physicians are licensed to practice medicine. The courts in Illinois have ruled that corporations are not permitted to do so. California courts on three different occasions have given the same ruling. The practice of radiology is the practice of medicine. Its technical details are a necessary and intimate part of its practice. Some may be delegated to technicians, but must in every case, be under the control and supervision of the radiologist. Technique is a necessary part of his professional life from which it cannot be separated. When a hospital hires and fires, controls the personnel of the department, and makes and collects the fees, it is practicing medicine.

That is why we should bother about it. There lies the serious threat to the practice of medicine today. General medicine and the older established specialties must know what is happening. They must be made to realize that this is happening to them. It is their ox that is being gored. When the staff of a large hospital advises the management to invest in x-ray equipment and hire a technician so that they may make some money, when a radiologist who has built up a practice in a hospital over a long period of years is then dismissed, in order to employ some one at a lower salary for the profit in the change, and with the tacit consent of the staff, something is very wrong. The wrong lies not with the hospital. It lies with the doctors who constitute the staffs of their respective institutions.

It is the responsibility of the staff of each and every hospital to see that the management of the institution recognizes the position of doctors practicing within their walls. Progress can only come by the development of mutual understanding and cooperation. All must work together and no one department should be favored to the detriment of other departments. The doctor needs the hospital. The hospital needs the doctor. Let them get closer to each other so that the patient whose interests count for most, may receive the very best of medical care and the very best of hospital service.

Hospitals and governing bodies all agree that

radiologists are medical specialists. Surely, it is now time for them to emerge from their mechanized chrysalis, and, as true consultants, function in their full capacity, based on a personal relationship with the patient.

The solution of the problem lies with the general medical profession acting through hospital staffs. It is up to radiologists to get busy and educate their colleagues to realize that their special consuls are not only needed; but that they can not get along without them. Interpret films in terms of anatomy, physiology, and pathology. Relate them to the history and clinical findings. Take more active part in the proceedings of County Medical Societies, and do more than merely demonstrate a sheaf of x-ray films. Demonstrate to hospitals and to colleagues that it is brains and not mechanisms which are offered; and radiology will assume its rightful place in medicine.

CONCLUSIONS

1. There is evidence of the practice of medicine by hospitals, in their respective departments of radiology.
2. This should be vigorously resisted by a campaign of education by radiologists working through their hospitals staffs and County Medical Society Units.
3. This situation should be recognized as a breakdown in medical practice which is especially dangerous because it comes from within the ranks of organized medicine itself.

DISCUSSION

Dr E. P. Coleman: It may seem a little bit out of order at first thought for one not particularly interested in x-ray to discuss this paper, but that is not the case. Dr. Hartman's topic is very important and points out something we may all face in one way or another. In connection with the social security problem in the past years I have been rather interested in seeing what attempts have been made by quite a number of organizations to control the practice of medicine. The hospital x-ray problem is the one most open to question at the present time. It should not be but apparently it is. It is a problem in economics, it seems to me, not only for you x-ray men but for all who have hospital connections.

May I emphasize by an example? In a county not so far from here, the relief funds were found to be rather inadequate. If the usual fractures, acute appendices and so forth were taken care of by the medical men and a rather meager fee paid by the relief organization for them, there was not enough money in the fund

to carry more than the 15th or 20th of the month and the work done after that had to be done gratis by the profession. The doctors in the community got around it as far as this temporary solution was concerned. They put the medical fee at the regular rate. The house call was the regular fee. The office fee was the regular fee in that community for the ordinary cash customer. That was the relief fee also. That would not take care of surgery. They sent their surgical cases to the hospital in that community where they were taken care of free by the doctors on the dispensary staff. Surgery was done by the doctors in the hospital gratis. The hospital collected the hospitalization fee. The doctors donated the services.

If we have the x-ray man hired and fired by a hospital board, it is only a short step until the surgeon is hired and fired by the same hospital board or by the hospital superintendent. The one who stands in with the hospital may have the job; otherwise not. You all know how uncertain that tenure of office might be.

There are certain trends along this line that I think you might be able to combat in some ways. Different communities have different problems, of course, and what would work in one community might not be effective in another. But there are some principles nevertheless whereby this can be worked out in some communities. It would be foolish for me to offer a solution of x-ray problems to x-ray men. But as it applies to the profession as a whole, I believe some problems can be worked out on this basis. Some hospitals, for example, have had the doctors own the x-ray equipment, or a group of doctors or one doctor may own and install the x-ray equipment and that be used on a rental basis from the hospital. Where that has been done it has been a solution of the problem. But in many communities the doctors cannot afford to do that, and when the staff complains that the machinery is obsolete or some glib-tongued salesman persuades the board to buy a new machine the board buys it. When they do that, the only problem they see is how they can charge the patient more. That brings up the problem Dr. Hartman suggested.

One possible way out may be this: obtaining representation on the hospital board by medical men in small communities, the type I come from, at least. Doctors frequently are not represented on the hospital board; doctors control the staff but there are none on the board. I do not know of any hospitals around this section of the state where doctors are a majority on the board. The board is run by some religious organization or by some groups of business men, the type we have seen discredited in their own business in the last four years but they tell us how to run a hospital. If we can get representation on that board, I believe it will solve some of our problems.

How can this be done? We do not want too many doctors on a board. We want business men on the board, but if we can have a minority representation, I believe we can have representation from the hospital staff as a full-fledged board member and in the small community an additional representative from the

county medical society. Those two medical board members may be able to prevent some of the types of socialized medicine that hospitals are trying to introduce, unintentionally, perhaps, but nevertheless trying to introduce. This cannot always be done but in many cases I think it can.

In large cities I think we are going to be faced with the problem of group hospital insurance next year. Down state much effort has been made this year to put that idea over. Personally I am opposed to it, but we are going to be compelled to face it unless we get control of our hospital boards.

Dr. I. S. Trostler: I have some very heartening news for radiologists. At the meeting of the American Medical Association at Kansas City last week, the House of Delegates of that body definitely went on record and stated, that "Roentgenology cannot be divided into technical and diagnostic." In other words they said that technical and medical radiology cannot be separated.

Furthermore, this same body declared in no uncertain terms, that the practice of radiology is the practice of medicine.

Here are two good, definite points which advance our position along the line that Dr. Hartman mentioned.

Dr. W. M. Hartman (Closing the discussion): I have only this to say. If there is any value whatever in this paper, my hope is that it may stimulate radiologists to give more voice to their problems and make them more familiar to the rest of the men in the general medical profession. I think, as a group, radiologists have been very weak in making their position clear. Of course, it is a new group, a new specialty, and is still struggling to place itself. But I think we need to get into the smaller units. As a man from down state, a country doctor, I know the rank and file of the medical profession have a very confused idea, if they have any idea at all, as to just what this is all about. They do not understand how it may directly affect them. The hospitals, I am sure, as far as my contacts have gone, are glad to do their part in giving medical service.

Dr. E. P. Sloan of Bloomington, I thought, expressed it very well at Bloomington a year ago, when he said that in his personal contacts with radiologists he had found them rather bashful. He was glad to know they could express themselves so well when they got together. He did not understand why they did not express themselves more in general meetings.

OCCUPATIONAL THERAPY IN MENTAL HOSPITALS

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Occupation among mentally ill and prisoners is not new. It has been used ever since we have mental hospitals and prisons. In fact, articles

produced in those places become so enormous that several states had to pass laws to prohibit their sales so as not to compete with Union labor. However, in former years, patients in mental hospitals and prisoners were employed for the benefit of revenue. Today we employ mental patients for the benefit of the patients themselves. Like all therapeutics from the beginning extravagant claims were made for that form of therapy. However, from years of experience, I can state without hesitation that occupational therapy is a valuable adjunct in the treatment of mental cases. Till the causes of insanity are known, the treatment of it must naturally be empiric.

The mind which is still a mystery can only be studied through the manifestation of the possessor.

In other words, we can only tell that a person hallucinates, or has delusions, if he tells us so, although experienced psychiatrists can sometimes tell from their actions that they do. No one, however, can tell what is going on in a person's mind by merely looking at him. From the above statement it can be seen that for a correct diagnosis, the cooperation of the patient is essential. The same is true in the treatment; we must try to win the confidence of our patient first, before we can successfully apply occupational therapy. To force a patient to do things which he does not care to do, will seldom help a patient. Kindness and patience are to an occupational therapist what skill in compounding a prescription is to a physician. Our procedure is simple.

When we receive our patients from the psychopathic hospital, they are carefully examined both mentally and physically. Those that we think other forms of therapy like medical, hydrotherapy, physiotherapy, etc. will benefit best, of course will receive that line of treatment. When we think patients will benefit from occupational therapy, we proceed by first finding out what the patient's occupation was before he was committed, and if he likes to continue to do the same kind of work while in the hospital, we let him do it, and watch the progress in his mental state, changing occupation if in our opinion, that will benefit the patient.

Those patients, however, who did not have any occupation before they were committed or are un-

willing to do any kind of work or owing to their mental state are destructive (who are constantly trying to destroy things, for those patients we have classes under experienced instructors who try to convert destructive tendencies into useful tendencies. We have in the Chicago State Hospital twelve trained occupational therapists of whom Miss Florence Starks is the head. The patients are divided into classes. We put as many patients in a class as will fit in that class. We grade the classes from kindergarten upwards. We have habit training classes for untidy patients, singing classes for those that are interested in singing, calisthenic classes for those interested in gymnastics, etc. Those patients that have destructive tendencies we put in a class by themselves. We give them rags to tear. While they are busy tearing rags, they do not tear their clothes, bedding, nor do they fight, and the most important thing is that their minds are occupied; they have no time to listen to voices or to dream which is so common in dementia praecox and which is a great factor in their mental deterioration. All that beautiful art work you see here tonight, was made by our patients. Some of these would surely have deteriorated were it not for the extensive occupational training they are receiving. When they improve we advance them to higher grades of work, etc.

To sum up. In the twenty-six years I have been connected with mental hospitals, the number of patients that make good after they leave mental hospitals, have more than tripled; those that stay in mental hospitals are more contented, fightless and live a more normal life. However, there are other factors that must be taken into consideration. We must consider that patients are committed earlier in their disease, the abolishment of restraint, other modes of treatment like hydrotherapy, physiotherapy and the newer medical agents that were not at our command in former years, these are surely factors in the good results we are obtaining in the care of the insane, but even so, improvements are more numerous and lasting longer than under other forms of treatment.

I am not going to burden you with statistics. I will just mention that for a given time, more patients from the Chicago State Hospital were restored to their rights and fewer patients were injured during that time, in which results oc-

cupational therapy was a leading factor. (When a patient is committed to a State hospital he loses his citizen rights, which can be restored by the County Court if proven to the satisfaction of the Court that the patient has recovered.)

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THE INCIDENCE AND CLINICAL SIGNIFICANCE OF VARIOUS TYPES OF THE DIPHTHERIA BACILLUS IN ILLINOIS

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The conquest of diphtheria has been marked by six outstanding contributions to our knowledge of the bacteriology and immunology of the disease. The identification of the etiological agent by Loeffler in 1884, the demonstration of its toxigenicity by Roux and Yersin in 1888, the preparation of antitoxin by von Behring in 1890, the diagnostic skin test by Schick in 1908, the active immunization with toxin-antitoxin by von Behring in 1913 and the preparation of toxoid by Ramon in 1924, have each been milestones marking our advancement against diphtheria. However, along this path of scientific progress many gaps have been left in our knowledge of the biology of the disease and its causative agent. One of these gaps was apparently uncovered by Anderson and his co-workers¹ in Leeds, England, in 1931. It had been tacitly assumed by modern bacteriologists that all of the essential details of the morphology and biochemical characteristics of the diphtheria bacillus were known, but the discovery of Anderson and his co-workers casts serious doubt upon this assumption. If Anderson's findings prove correct, his contribution may mark another significant milestone in our knowledge of the disease.

In 1931 Anderson and his co-workers announced that most strains of the diphtheria bacillus fell into one of three groups according to their colonial morphology and certain biochemical characteristics. They further stated that the clinical severity of the disease was directly

¹Read before the Section on Public Health and Hygiene, Illinois State Medical Society, Springfield, May 20, 1936.

correlated with the type of the diphtheria bacillus causing the disease. On this basis they proposed that those strains having certain cultural characteristics and which they found to be most frequently associated with the severe cases should be called "gravis" strains, while those strains having certain other cultural characteristics and usually isolated from mild cases were termed "mitis" strains. A third or "intermediate" strain was also described which possessed some of the cultural characteristics of both the gravis and mitis strains and was usually associated with the more severe cases of the disease. For details of the characteristic colonial morphology and the associated biochemical and cultural reactions of the three types, the reader is referred to the original paper of Anderson and his collaborators.¹

This revolutionary announcement at once caused many workers in England to attempt to corroborate Anderson's results. While there have been many controversies over some of Anderson's conclusions, it may be generally stated that in England, Scotland and Germany, the only place where similar studies have been made, the essential findings of Anderson, described in his original communication, have been satisfactorily confirmed. The discrepancies in Anderson's work, reported by several investigators will be discussed as they pertain to the results found in our study of the types of diphtheria bacilli found in Illinois.

With the exception of a brief report by Whitley² on the incidence and clinical significance of the gravis, mitis and intermediate types found in Maryland, there has been no report,* so far as we are aware, of an attempt to corroborate Anderson's findings in this country. We, therefore, believed it of interest to determine the incidence of the various types of diphtheria bacilli in this state and to attempt to correlate the types of the organisms with the clinical severity of the cases from which they were isolated. To this end we have studied the majority of the diphtheria strains isolated from the nose and throat cultures routinely submitted to our central and branch laboratories for diagnosis, quarantine re-

lease or inspection during the past six months. All of these strains were grown on Anderson's¹ chocolate-tellurite medium to study their colonial morphology, and many of them have been tested for virulence and starch fermentation.

Information regarding the clinical severity of the cases from which the strains were isolated was obtained by sending questionnaires to the physicians attending the cases. While the number of cases in this series is admittedly small, we believe that our results are significant enough to warrant the presentation of a preliminary report at this time.

Incidence of the various types of Diphtheria Bacilli in Illinois. Swabs from 109 cases and carriers were streaked on Anderson's chocolate-tellurite medium and the plates incubated 48 hours at 37°C. before examining the colonies with a binocular colony microscope. A stained smear was also made of the organisms in the colonies and examined microscopically to be certain that we were typing only colonies of the diphtheria bacillus. From these 109 cases and carriers, 162 strains or cultures were isolated, of which 5.5% were gravis, 78% intermediate, 2.9% mitis and 4% atypical strains. Mixed cultures containing more than one type of the diphtheria organism were found in 9.2% of the cases and 9% of the carriers.

Table 1 indicates the types of strains isolated from the 109 cases or carriers. It will be noted that the majority of the strains fell into the intermediate group, while the gravis and mitis strains constitute only from 3 to 5% of all the strains isolated. The strains not conforming in their colonial morphology to any of the three types, designated as atypical strains, are very few in number; and the cases from which more than one type was isolated either on primary or repeated culture, constitute approximately 10% of the entire number.

Table 2 shows the incidence of the various types of the diphtheria bacillus in certain cities in England, Scotland and in Berlin—the only countries where such studies have thus far been conducted. It will be noted that the percentage distribution of the various types differs greatly in the locations investigated. In those places where a severe type of the disease occurs, the

*After this paper was presented for publication, a report by Perry, Whitley and Petran appeared in the *Am. Jour. Hyg.*, 23: 539, 1936, describing the distribution and significance of the types of diphtheria bacilli in Maryland.

TABLE 1. TYPES OF DIPHTHERIA BACILLI AND NUMBER OF CULTURES ISOLATED FROM 109 CASES AND CARRIERS

	Gravis	Inter- mediate	Mitis	Atypical	Mixed Cultures				Total
					Gravis and Inter- mediate	Mitis and Inter- mediate	Atypical and Inter- mediate	Atypical Mitis and Inter- mediate	
No. of cases.....	5 (5.7%)	66 (75.8%)	4 (4.5%)	4 (4.5%)	3 (3.4%)	3 (3.4%)	1 (1.0%)	1 (1.0%)	87
No. of cultures from cases.....	7 (5.5%)	97 (76.3%)	4 (5.0%)	4 (3.1%)	5 (3.9%)	5 (3.9%)	3 (2.3%)	2 (1.5%)	127
No. of carriers.....	0	17	1	(9.0%)	2 (9.0%)	0	0	0	22
No. of cultures from carriers	0	28 (80.0%)	1 (2.8%)	2 (5.0%)	4 (11.4%)	0	0	0	35

gravis type predominates (Leeds, Hull and Berlin), and conversely the incidence of the gravis type is low in those communities having a mild type of diphtheria (Dundee and Glasgow). While the percentage incidence of the various types found in Illinois differs from the incidence reported in the various cities in England, Scotland and in Berlin, it most closely approaches the incidence of types found in Glasgow where a mild form of diphtheria is prevalent. Robinson and Marshall³ have found that in Manchester the percentage incidence of the various types is subject to change at different periods of the year, the fluctuations being chiefly within the gravis and intermediate groups. Due to the short time interval covered by our study and the comparatively small number of strains isolated, we have made no attempt to determine any fluctuations in the incidence of types which may occur in this state during various periods of the year.

Stability of Types.—The first serious setback to the conclusions of Anderson and his co-work-

ers was brought out in the report of Menton⁴ in 1932. This worker stated that in his experience the gravis, mitis and intermediate types were not stable in their colonial or biochemical characteristics. He, therefore, concluded that there was no valid basis for attempting to correlate the type of the organisms with the clinical severity of the case. Fundamental as this point is in accepting Anderson's conclusions, it has not yet been definitely settled, for while several workers (Anderson et al,⁵ Carter⁶ and Murray⁷) have been unable to essentially alter the original morphology and biochemical characteristics of the various types by drastic *in vivo* and *in vitro* laboratory manipulations, others (Menton,⁴ Christison,⁸ Menton et al⁹ and Wright and Rankin¹⁰) have found inconsistencies in the morphological and biochemical characteristics of the different groups, changes in type on repeated cultures from cases, large numbers of atypical strains and mixed cultures, or dissociation *in vitro* and *in vivo*.

In order to determine the stability of the va-

TABLE 2. INCIDENCE OF BACTERIAL TYPES*

Area	No. of Cases	Gravis	Mitis	Inter- mediate	Atypical	Mixed
Manchester	542	129 (23.8%)	104 (19.2%)	296 (54.6%)	8 (1.5%)	5 (0.9%)
Leeds	668	518 (77.5%)	113 (17.0%)	37 (5.5%)		
Hull	310	184 (59.4%)	27 (8.7%)	90 (29.0%)	7 (2.3%)	2 (0.6%)
Dundee	107	4 (3.7%)	42 (39.3%)	61 (57.0%)		
Glasgow	160	3 (1.9%)	23 (14.4%)	115 (71.8%)	19 (11.9%)	
Berlin	46	20 (43.5%)	14 (30.4%)	10 (21.7%)	2 (4.4%)	
Illinois	87	5 (5.7%)	4 (4.5%)	66 (75.8%)	4 (4.5%)	8 (9.2%)
Total	1,920	863 (44.9%)	327 (11.8%)	675 (35.1%)	40 (2.0%)	15 (0.7%)

*A modification of the table by Robinson, D. T., and Marshall, F. N. Jour. Path. and Bact., 37: 76, 1934.

TABLE 3. CONSTANCY OF TYPES OF DIPHTHERIA BACILLI ON REPEATED CULTURES FROM CARRIERS AND CASES

	Number of Cultures Taken				Total
	2	3	4	9	
No. of cases and carriers.....	17	8	4	1	30
No. of cases and carriers in which type remained constant.....	13	6	4	1	24
	(76.5%)	(75.0%)	(100.0%)	(100.0%)	(80.0%)
No. of cases and carriers in which type changed.....	4	2	0	0	6
	(23.5%)	(25.0%)			(20.0%)
Approximate No. of days between taking cultures.....	7-10	4-10	2-5	2-4	

rious types of organisms which we isolated from cases and carriers in which two or more cultures had been taken, our results were analyzed to detect any change in type during the repeated cultures.

Table 3 shows the results of analyzing the types of cultures obtained on repeated (2, 3, 4, and 9 cultures) examinations of 30 cases and carriers. It will be noted from the percentages of the total number of cultures than in 80% of the cases and carriers the type of organism remained unchanged, while 20% of the cases and carriers showed a change from one type to another on repeated culture. This changing of type has not been thoroughly investigated by previous investigators. Anderson et al⁵ found that 8 out of 17 convalescent cases in a fever hospital showed a change in type on repeated examinations, but they found no change in type when the cultures were taken at intervals of less than 30 days. They attributed this apparent change in type to a superimposed infection from other patients in the hospital harboring another type of the organism. In support of the above contention they cited four cases isolated at home in which no change in type was detected. None of the cases and carriers in our series showing a change in type had been hospitalized, as far as we can tell from our records, and time intervals when cultures were taken were all less than 30 days. We do not believe that the finding of different types upon repeated culture necessarily indicates a *change of type in vivo*, for it is quite possible that in streaking out the successive cultures on the plates some types may be missed if they are few in number. It may be noted at this point that no particular difficulty was experienced in classifying the various types of colonies on the chocolate-tellurite medium. While no systematic study of the stability of the various types *in vitro* was carried out, it was our usual experience that cultures maintained on

Loeffler's medium in the ice box for periods of several months retained their original colonial morphology when plated out at various intervals. Intradermal virulence tests on guinea pigs indicated that, in keeping with the results of others, the various types showed little difference in their virulence for these animals. The results of the starch fermentation tests are not complete enough to be reported at this time.

It may be objected that since several workers have pointed out that colony morphology is unstable and frequently inconsistent with the accepted biochemical characteristics, a classification such as we have made based on colonial morphology alone is untenable. However, since one of us (T. C. G.)¹¹ several years ago made a thorough study of the stability of the colonies of the diphtheria bacillus and found them extremely difficult to dissociate, and since Christison⁸ was one of the first to describe the instability of the gravis, mitis and intermediate colonies and yet in her most recent publications she¹² and her associates¹³ made colony morphology the primary method of classifying the various types to be correlated with the clinical severity of the cases, we feel justified in using colony morphology as our sole method of classification.

Correlation of Colony Type with the Clinical Severity of the Case. Anderson et al¹ reported that the gravis type of the diphtheria bacillus was usually associated with the more severe cases of diphtheria, and that these cases did not respond favorably to even large doses of antitoxin. On the other hand the cases from which the mitis organism was isolated were usually mild and responded well to the usual doses of antitoxin. In their second publication Anderson and his co-workers⁵ stated that the intermediate strains were also frequently associated with the severe, paralytic cases of diphtheria.

Subsequent studies have shown that Ander-

son's conclusions do not necessarily hold true in localities outside of Leeds. For example, Menton et al⁹ found that 15.8% of the severe cases in Staffordshire were caused by mitis strains. Carter⁶ found that in Glasgow both the mitis and the intermediate strains caused the severe cases, while the gravis cases were mild. Parish et al¹⁴ isolated the gravis organism from approximately 50% of their cases regardless of the clinical severity. On the other hand several workers (Leete et al¹⁵ in Hull, Wright et al¹³ in Edinburgh, Clauberg¹⁶ in Berlin and Robinson and Marshall³ in Manchester) corroborated Anderson's contention that the severe, serum intractable cases were caused by the gravis and frequently the intermediate strains, while the mild cases, readily amenable to serum therapy, were caused by the mitis strains.

These divergent results regarding the correlation of types of the diphtheria organisms with the clinical severity of the disease, suggest that the correlation may be only a local phenomenon; or, as may be inferred from the studies of Ewing,¹⁷ that only gravis strains in a particular serological group are capable of causing severe cases of the disease.

Inasmuch as no systematic study attempting to correlate the clinical severity of diphtheria with the type of the causative organism has been published in this country, we believed it of interest to make such a study in this state. Questionnaires were sent to each of the attending physicians who had submitted positive nose and throat swabs during the past six months, requesting information regarding location of the false membrane, temperatures, amount of antitoxin injected, response to antitoxin, complications, post diphtheretic paralysis and termina-

tion. The majority of the physicians kindly responded to this request and we wish to take this opportunity to thank them for their cooperation.**

Classification of Cases on the Basis of Clinical Severity. It is admittedly difficult to classify cases of diphtheria accurately in regard to clinical severity on the basis of the information obtained from the returned questionnaires. However, by grouping certain clinical conditions and type of treatment as shown in the following table, we believe our classification of mild, moderately severe and severe cases is sufficiently accurate for the purposes of this investigation.

In general cases were assigned to a given group if they presented two or more of the conditions in that group. Few of the cases presented all the conditions in the group to which they were assigned. It may be noted in passing that the amount of antitoxin given is not necessarily a reliable index of the severity of the case since there is always the possibility that more than the necessary amount of antitoxin was given. The use of intravenous injections of 10% dextrose was confined to those cases treated in the Chicago Municipal Contagious Disease Hospital and, as the table indicates, was only resorted to in the more severe cases.

Types of Diphtheria Bacilli Isolated from Mild, Moderately Severe and Severe Cases. A total of 57 questionnaires were received out of 87 sent to the attending physicians. Based on the clinical information in these questionnaires each case was designated as mild, moderately severe or severe, as previously described. The clinical severity of each case was correlated with the type or types of organisms isolated from

TABLE 4. CRITERIA FOR ESTIMATING THE CLINICAL SEVERITY OF DIPHTHERIA CASES

Clinical Condition and Treatment	Mild Case	Moderately Severe Case	Severe Case
Location and Extent of Membrane	Moderately Extensive Membrane in Pharynx or Nasal Cavity	Extensive Membrane in Pharynx or Nasal Cavity	Membrane Extending to Larynx
Complications	None	Rare	Frequent
Post Diphtheretic Paralysis	None	Rare	Frequent
Units of Antitoxin Given	Up to 30,000 Units	40,000 to 60,000 Units	More Than 60,000 Units
Response to Antitoxin	Good	Good or Fair	Poor
Intravenous Injections of Dextrose	None	Frequent	Usual

the case. The results of this correlation are shown in the following table.

TABLE 5. CORRELATION OF THE CLINICAL SEVERITY OF CASES WITH TYPE OF ORGANISM ISOLATED

Type of Organism Isolated	Clinical Classification			Total
	Mild	Moderately Severe	Severe	
Gravis	2 (100.0%)	0	0	2
Intermediate	33 (68.7%)	11 (23.0%)	4 (8.3%)	48
Mitis	1 (100.0%)	0	0	1
Atypical	2 (100.0%)	0	0	2
Mixed Types:				
* (M & I)	2 (50.0%)	1 (25.0%)	0	3
* (A, M & I)	1 (25.0%)	0	0	
Total	41 (72.0%)	12 (21.0%)	4 (7.0%)	57

*M—Mitis. G—Gravis. I—Intermediate. A—Atypical.

It will be noted at once that the intermediate strains caused the majority of the mild, moderately severe and severe cases. The two gravis cases were both mild. There was but one mitis case which was also mild. Most of the atypical and mixed cultures caused a mild form of the disease.

The number of cases is probably too small to form the basis for any definite conclusions. But from the information at hand we can at least state that the severe or even moderately severe cases are not associated with the gravis strains. If we take these findings as an indication of the general severity of diphtheria in Illinois at the present time, we may state that the severe form of the disease, as it exists in England and Germany where the use of 150,000 to 200,000 units of antitoxin per case is not uncommon, does not exist in this state. If, as this study would indicate, only mild or moderately severe cases of diphtheria are occurring at the present time in this state, then our findings agree with those of Carter⁶ in Glasgow and Murray¹⁸ in Dundee where a mild form of the disease prevails and the gravis strains are apparently not associated with the severe cases. With but few exceptions the response to antitoxin was good in our series of cases—another indication that we are not dealing with the same severe clinical form of the disease as found in England and Germany.

Since but one death was reported in our series

of 57 cases, we will briefly outline the course of the case.

J. H., male, white, aged 13½ years. Admitted on the 4th day of the disease to the hospital. Temperature was 105.8° F and 40,000 units of antitoxin were given intramuscularly. An extensive membrane necessitated intubation. A total of 4 litres of 10 per cent. dextrose were injected intravenously during the course of the disease. Response to antitoxin was poor, the temperature remaining high up to the time of death, when it was 102.2°, five days after admission. Complications of toxic myocarditis and bronchopneumonia developed. An intermediate strain was isolated from this case.

This case probably represents the severe, serum intractable form of the disease prevalent in many parts of England and Germany.

Discussion. The results of this investigation substantiate the growing conception that the percentage incidence of the gravis, mitis and intermediate types of the diphtheria bacillus may vary greatly in different localities. It also seems apparent from the work of others and our own results that where the prevailing type of diphtheria is mild in character, the incidence of the gravis strain is low and it is not associated with severe cases of the disease. These results do not directly oppose the conclusions of Anderson but rather conform with the views of the Leeds workers modified to some extent by the subsequent work of others who have investigated the problem.

CONCLUSIONS

1. Of the 162 strains of *C. diphtheriae* isolated from 109 cases and carriers, 5.5% were gravis, 78% intermediate, 2.9% mitis and 4% atypical strains, based on their colonial morphology on chocolate-tellurite agar. Two or more types of organisms were found in approximately 9% of the cases and carriers.

2. Repeated cultures from 30 cases and carriers showed that the original type was recovered at each of 2, 3, 4 or 9 repeated examinations in 80% of the cases and carriers. A change of type on repeated examination occurred in 20% of the cases or carriers.

3. Correlation of the type of organisms isolated with the clinical severity of the case indicated that the majority of the mild, moderately severe and severe cases were caused by the intermediate strains. Gravis strains were not

isolated from any of the severe or moderately severe cases.

**We are especially indebted to Dr. Archibald L. Hoyne of the Chicago Municipal Contagious Disease Hospital for sending us cultures and allowing us to consult the clinical histories of many cases.

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DISCUSSION

Dr. Perry J. Melnick, Decatur: My chief interest is in the field of pathologic anatomy, so that I am scarcely qualified to discuss the technical details of this paper. Diphtheria is still a problem in spite of antitoxin and the Schick test and even in spite of toxoid. Clinicians are familiar with the occasional case of diphtheria that develops in the child who has received toxoid. Pathologists are impressed with the variations in the anatomic picture at autopsy. One type of the case may have a small or almost an insignificant membrane and the anatomic picture be that of a very severe sepsis. Another type may have a very extensive membrane and yet very little sepsis and the patient die of some mechanical cause, such as obstruction of the larynx, or of bronchopneumonia. And there is a third type of case, a type in which the patient apparently recovers from the disease and several weeks later dies suddenly, and at autopsy we find an interstitial myocarditis characterized by an infiltration of eosinophilic leukocytes.

Bacteriologists know that the diphtheria bacillus varies a great deal in its morphology. The variation in morphology can not be reliably correlated with the virulence. One strain of bacilli will produce a powerful toxin and another strain, identical in morphology with the first, will produce very little or even no toxin. Of course, the virulence depends not only on the toxin production but on the ability of the organism to invade the mucous membrane. Diphtheria carriers may not suffer from the disease and yet carry organisms which

produce a powerful toxin. That leads to the factor of the resistance of the host—that is, the ability of the host to produce antitoxin and bactericidal substances.

That Dr. Shaughnessy and Dr. Grubb are well aware of these puzzles is evidenced by this piece of work in which they attacked the problem from a new angle, the colony morphology. I want to congratulate them on this excellent paper.

Dr. Lloyd Arnold, Chicago: Dr. Grubb mentioned the serological classification of the diphtheria bacillus. I wonder, in these three types, whether there is any difference in the toxin production. Not only that, but has anything been done as to the ability of those toxins in the three strains to produce antitoxins or anti-bodies in animals. Has it been put to an experimental test? The gravis strain, isolated in a number of severe cases, as Anderson did; don't they produce more powerful toxins than do those toxins produce anti-bodies in laboratory animals?

Dr. Thomas C. Grubb (in closing): Regarding Dr. Arnold's question, there has been a study made of the toxigenicity of the various types of organisms, and it has been found that apparently the three types, the gravis, intermediate and mitis, produce the same type of toxin. It has been stated in the literature that the mitis type of organism produces a toxin of a higher Lf value than the other types. The chief difference seems to be that the gravis type of organism produces its toxin much more rapidly and is much more invasive than the other types.

As to Dr. Arnold's question regarding any difference among the various types in their ability to stimulate the production of antitoxin, I do not recall any statements in the literature as to whether one is more antigenic than the other in producing a higher concentration of antitoxin. I do not recall any work off-hand along that line.

Is it not true that perhaps in these cases of very severe diphtheria, the case is severe because antitoxin was administered late in the course of the disease, and not necessarily because the disease happens to be produced by a particular type of organism? I think this is a very logical question to ask, but there have been few studies made along that line. Robinson and Marshall stated that the time interval between the onset of the disease and the administration of antitoxin is not important in determining the outcome of the disease; that is, they found in cases caused by the mitis organism, if the antitoxin was injected one day later than the cases caused by the gravis and intermediate, that the outcome of the mitis case was still favorable, whereas in the gravis and intermediate cases they were very frequently fatal.

Another group of workers in England, Wright et al. for instance, state that the time interval between the onset of the disease and the administration of antitoxin is a very important factor in determining the outcome of the disease irrespective of the type of organism isolated from the case. Evidently this question is not yet settled.

PUBLIC HEALTH PROBLEMS OF SOUTHERN ILLINOIS

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Very striking improvement has been observed in the control over preventable diseases in Illinois during the last quarter of a century and particularly during the last decade. Unfortunately, advancement in that direction has not been uniform throughout the State. Some areas have succeeded in taking advantage of preventive medicine to a reasonably satisfactory degree. Others have made little or no progress in that respect. Most of the communities in the southern part of the State have been noticeably slow in organizing and developing programs of sanitation and hygiene. The influence of this variation in aggressiveness toward the adoption of public health service is reflected in morbidity and mortality rates among the populations concerned.

Southern Illinois may be said roughly to include thirty-four counties which embrace a little less than one million people, about one-eighth of the population of the State. Practically all of the statistical data which are ordinarily accepted as an index to prevailing health conditions betray an unfavorable situation in the southern area compared with the remainder of the State. This is true for most of the communicable diseases regardless of whether or not Chicago is included in the comparative study. Typhoid fever, for example, has killed more people in southern Illinois during the last decade than in all the remainder of the State, 705 out of a total of 1,397 fatalities in Illinois. For the southern section the average annual mortality rate from typhoid fever for the ten years was 7 per 100,000 population against a State-wide rate of 2. This unfavorable difference in rate was responsible for a relative excess of 500 deaths and upwards of 5,000 cases of illness in the thirty-four southern counties during the decade.

The death rate from infantile diarrhea and enteritis in the southern area is more than double that for the State at large. For the last six years these conditions in babies under two

years of age have been responsible for an annual mortality rate of 23 against a State rate of only 9 per 100,000 population. Expressed in more striking terms, considerably over one-quarter of all deaths from infantile diarrhea during the last six years in Illinois have occurred among somewhat less than one-eighth of the population which inhabits the southern portion of the State. Had the loss in the southern area been at the same rate which prevailed in the remainder of the State, the number of deaths would have been about 300 instead of 1,331.

Diphtheria has caused losses in much the same proportions. For the last five years the mortality rate in southern Illinois from this disease has been somewhat more than twice that for the remainder of the State, 5.9 and 2.5, respectively. This unfavorable difference represents a comparatively excessive loss of some 130 lives and a relative excess of approximately 1,500 cases.

Tuberculosis is substantially more prevalent in the southern area than elsewhere in the State with the exception of Chicago. For the last decade the mortality rate from this disease has averaged 65 per 100,000 people in the southern section against 58 in the remainder of the State exclusive of Chicago. With Cook County eliminated from consideration, the annual rate for the remainder of the State was only 50, indicating a very decidedly unfavorable situation in the south, amounting to an excess loss of about 150 lives annually.

Whooping cough likewise has caused relatively excessive losses in the southern counties. For the last seven years the average annual mortality rate from this disease was 6.2 in the southern area compared with 2.8 in the State at large. Substantially more than one-fourth of all mortality from whooping cough in Illinois since 1927 took place in the southern section. Had the rate been no higher in this area than elsewhere in the State, there would have been only 200 instead of 485 fatalities from the disease in that area.

Malaria and trachoma constitute a public health problem of considerable magnitude in Illinois which is confined almost entirely to the southern zone. While neither is responsible for much mortality, both tend to destroy the spirit and create no end of economic mischief in individual and community life. Both diseases are

preventable. Lack of sanitation is a dominant factor in the spread and perpetuation of both. No accurate records on the prevalence of either are available. Reports, however, show that 8933 cases of trachoma were detected by special workers during the twelve months ended with June 18, 1935. It may safely be said that the number infected with malaria runs well into the thousands.

Infant mortality is sharply higher in the southern area than anywhere else in the State. During the last decade an average of 72 per 1,000 babies born failed to survive the first year of life in that section compared with only 56 in the remainder of the population. This unfavorable difference in rate indicates a comparative excess loss of 2,500 babies, an average of 250 annually.

The foregoing observations, based on records of the State Department of Public Health, show unmistakably that the people of southern Illinois are burdened with a disproportionately heavy loss from communicable diseases. Fully 450 more inhabitants of southern Illinois die annually from typhoid fever, infantile diarrhea, diphtheria, tuberculosis and whooping cough than would be the case if mortality rates were no higher than elsewhere in the State. The incidence of illness from these diseases is, of course, proportionately high, aggregating between 4,000 and 5,000 more cases annually than would be experienced under conditions comparable with those further north.

The reasons for the impressively unfavorable communicable disease situation in southern Illinois warrant careful study. They can scarcely be attributed to the racial characteristics of the people. The population is predominantly native white. Only seven of the thirty-four counties have a significant Negro element and in only three does the Negro inhabitants exceed 10 per cent. of the population.

The excessively high communicable disease rates cannot be attributed justifiably to the quality of medical service in the area. A report in the *ILLINOIS MEDICAL JOURNAL*² of a study made by the State Department of Public Health shows that mortality rates from diabetes, appendicitis and chronic nephritis, three non-communicable diseases which require an exacting de-

gree of medical skill and knowledge to successfully diagnose and treat, are actually lower in southern Illinois than in either the central or northern portions of the State. Other reports show that the number of specimens sent from the southern counties to the State diagnostic laboratories for examination is fully as high in proportion to the population as from any other area of the State. These observations indicate that the medical profession is as alert, active and competent as elsewhere. One must look to some other source for the fundamental cause of the unfavorable public health situation.

Climate and topography are probably factors of some importance with respect to three or four diseases. The relatively long summer season and a considerable area of swampy lowland undoubtedly favor mosquito and fly breeding. Mosquitos are responsible for the malaria while flies play a part in the spread of typhoid fever and infantile diarrhea. Poor drainage may favor the contamination of water supplies and in that way contribute to the spread of typhoid fever.

These factors are probably secondary, however, to the lack of organized public health facilities which, if available, could be utilized to promote sanitation and the practice of preventive medicine. A fairly good index to public health facilities in a territory is the number of public health nurses employed. Records of the State Department of Public Health show that only 45 nurses are now engaged in public health work throughout all of southern Illinois and that 21 of the 34 counties have no public health nurses. Of the 45 nurses in this area, 15 are employed in Madison and 15 in St. Clair Counties, leaving only 15 for all the other 32 counties with 600,000 people. Exclusive of Cook County, there are 264 public health nurses at work elsewhere in the State. For the southern section there are only 5 public health nurses for each 100,000 people while for the remainder of the State, exclusive of Cook County, there are 10. A total of 44 counties in the State have no public health nursing service and 21 of these are in the southern section.

With tuberculosis sanatoria the situation is much the same. Madison is the only County in the southern tier which maintains a public

sanatorium while elsewhere in the State there are 16 county and 3 municipal public sanatoria. A total of 44 counties levy a special tax under the Glakin law with which to raise funds officially for anti-tuberculosis work but only 4 of those counties are in the southern group. Income from the annual sale of Christmas seals has averaged in recent years over 2 cents per capita for the State population exclusive of Cook County. For the southern counties it has been considerably less than 1 cent per capita. Excluding Madison, Marion and St. Clair Counties, it appears that the income from Christmas seal sales is less than \$4,000 annually in the southern area, an almost insignificant fund for upwards of half a million people.

In common with the remainder of the State there are no organized county health departments in southern Illinois. None of the municipalities have full time medical health officers. Only a few of those communities where physicians act as health officers on a part time basis have any public health nurses. In short, there is an almost universal shortage of organized, official local facilities through which to apply preventive medicine in the southern section of Illinois. With the exception of three or four counties, this conclusion is the inevitable answer to whatever method of measurement is employed in appraising the situation.

From this review of prevailing conditions in southern Illinois, the magnitude and character of the public health problems are clearly revealed. Communicable diseases cause excessive losses, on the one hand, while public health facilities are insufficient to meet adequately the most elementary requirements of preventive medicine. Sanitation is much below the standard for modern society. Health education in the fundamentals of hygiene, such as dietary needs, personal cleanliness, sanitation of milk, food and water has not filtered down into the masses of the people.

I believe that it is now generally recognized by the medical profession and by public health authorities that excessively high prevalence rates of communicable disease may be properly regarded as symptoms of more fundamental deficiencies in basic health requirements. It is more than probable, for example, that under-

nutrition flourishes in communities which do not take advantage of the simpler preventive procedures such as inoculation and sanitary supervision over water, milk and food. Adequate feeding is perhaps more fundamental than any other factor in the promotion and maintenance of good health. This was emphasized in the inaugural address of Dr. James S. McLester when he assumed the office of president of the American Medical Association last year at Atlantic City.

Acceptance of this dictum compels one to believe that many children in southern Illinois, as well as elsewhere in the State, are destined to reach adulthood with serious developmental deficiencies because of unbalanced and inadequate diet and because of a neglect of remedial physical defects. An impressive illustration of what may take place is found in a report³ by Lt. H. D. Templeton of the Medical Corps of the United States Navy. While acting as medical examiner at the Navy recruiting station in Indianapolis, he was compelled to turn down because of physical defects 623 out of 881 applicants for enlistment. From this experience Dr. Templeton concluded that:

"This survey suggests that periodic physical examinations of school children might have resulted in the correction of many nutritional and developmental defects."

While the physical standards for the Navy are undoubtedly high, the requirements for satisfactory, efficient civil life are no less exacting.

It may be concluded, therefore, that the fundamental habits and practices that influence health are susceptible to much improvement. This may be accepted as one of the pressing public health problems in southern Illinois although it is by no means confined to that area.

The remedy needed to improve the communicable disease situation in southern Illinois is perfectly clear to any student of public health administration. Organized local health departments manned by an adequate staff of properly trained personnel available for full time duty are necessary to solve the problem. This conclusion is based upon observation of the experiences in southern Illinois and upon reports from other localities.

It must not be assumed that nothing has been attempted and nothing accomplished for the

public health in southern Illinois. Anti-typhoid fever programs have been undertaken with marked success in numerous localities. A majority of the susceptible population in several counties has been vaccinated against typhoid during the last few years.

A southern Illinois community, New Burnside Township in Johnson County, has the distinction of being the first in the State and one of the first in the nation to offer free inoculation against diphtheria to all children. That was done in 1923 when most of the children were inoculated and when this means of prevention was still new. Another southern County, Wabash, was perhaps the first in the State to carry out a successful county-wide diphtheria eradication campaign on a pay basis. Over 60 per cent of the school children were inoculated by family physicians in 1927 as a result of the campaign.

Numerous other similar illustrations might be cited. The difficulty has been a lack of continuity and permanency of these programs. Activities of this type have been sporadic in point of time as well as geography. They have been

limited usually to one disease. While the rates from most of the communicable diseases have declined, the improvement has been slower than elsewhere and has not kept pace with the advancement of preventive medicine. No broad, comprehensive public health programs have been established on a firm, permanent basis.

The reason is largely economic. The illustrations of sporadic achievements are evidence of public appreciation for the advantages offered by preventive medicine. The difficulty is in financing a program.

The probability of paying for reasonably adequate public health programs from local resources in those counties most in need thereof is remote. These areas are largely rural and the per capita income is low. Consequently the promise of building up a satisfactory public health service in southern Illinois depends in no small measure upon the possibilities of State or federal assistance. On this point Winslow has said:⁴

"There are two facts we have not faced in this country. The first is that the rural district needs just as much and more health machinery than the urban dis-

MORTALITY—ILLINOIS BY SECTIONS TEN YEARS 1926-1935

Section	Counties	Population 1934		Typhoid Fever		Tuberculosis		Diphtheria	
				Deaths*	Rate*	Deaths*	Rate*	Deaths*	Rate*
Northern	33	5,702,208		404	0.75	35,648	65.4	3,213	6.13
Ex. Cook	32	1,561,308		207	1.3	7,677	48.4	491	3.0
Ex. Chicago .....	..	2,211,508		225	1.02	12,840	61.2	725	3.5
Central	35	1,151,347		288	2.5	5,911	51.5	404	3.4
Southern	34	986,485		705	6.95	6,370	65.0	502	4.9
State	102	7,876,000		1,397	1.9	47,929	63.3	4,119	5.5

*Deaths are total for decade but rates are annual average per 100,000 population.

Sections	Whooping Cough 1928-1935		Diarrhea Under 2 Years 1929-1934		Infant Mortality 1926-1934	
	Deaths*	Rate*	Deaths*	Rate*	Deaths*	Rate**
Northern	905	2.02	2,365	6.97	43,608	55.7
Ex. Cook	316	2.57	635	6.94	11,584	55.7
Ex. Chicago	387	2.3	831	6.3	15,361	53.9
Central	368	4.0	698	10.0	10,332	59.95
Southern	485	6.2	1,331	22.5	11,323	72.1
State	1,758	2.8	4,394	9.4	65,263	58.8

*Deaths are total for periods indicated but rates are annual average per 100,000 population.

**This rate is per 1,000 births.

PUBLIC HEALTH FACILITIES EXCLUSIVE OF COOK COUNTY

Section	Public Health Nurses		Tuberculosis Sanatoria		Tuberculosis Tax Counties
	Number	Per 100,000	Number	Beds	
Northern	171	11	9	622	18
Central	93	8	7	343	19
Southern	45	4½	1	90	4
State	309	10	17	1,055	41

tract of the same size. I have no patience with the compromises that have been made by many writers in this thing in the past in talking about health budgets of \$10,000 as being adequate for 20,000 people in the country. It is all nonsense. The rural dweller needs every bit as much service and it costs more to give it to him because of the distance. Let's face that fairly and squarely.

"The second point we have to face is that the rural district cannot pay for any such service. That always we have to recognize and the answer, of course, is that the cost must be distributed in some way and borne by the urban districts and the rest of the state. I think there is no escape from that conclusion. We recognize it in road building and education. We have to recognize it in health. At any rate, we must study this problem of rural health service and finances and not dodge the question by pretending because the small district cannot pay for good health service that it does not need it. Because that is not true."

The situation in southern Illinois constitutes a distinct challenge to the public health agencies of the State. The most promising possibility of meeting that challenge successfully in the near future is through the plan offered by the United States Public Health Service. Funds are available from that source to meet just such needs as those of southern Illinois. To the U. S. Public Health Service has been appropriated an annual fund of \$8,000,000 for allocation among the several States. Illinois should be entitled to more than \$400,000 per year from that fund. The primary purpose for which this money was appropriated is to build up and strengthen public health services in rural districts. Local agencies may obtain these funds, however, only through the State Department of Public Health.

I have described the problem and suggested what seems to be a practicable solution. Co-operative effort between State health authorities and local officials is needed to meet the challenge.

REFERENCE

1. Ill. Med Jour., March, 1936.
2. Ibid, February, 1935.
3. U. S. Naval Medical Bulletin, January, 1936.
4. Ill. Health News, December, 1928.
5. Statistical Bulletin 58, Ill. State Dept. of Public Health.
6. Various annual reports and periodicals of the Illinois State Department of Public Health.

DISCUSSION

Dr. J. J. McShane, Springfield: Dr. Montgomery is to be congratulated on his paper. The topic of Public Health Problems of Southern Illinois has been covered so well that there need be but little discussion. How-

ever, there are several points in Dr. Montgomery's paper that I should like to discuss briefly.

First, regarding the problems of typhoid fever and the mortality of typhoid fever in southern Illinois, Dr. Montgomery stated that during the last decade a total of 705 deaths out of a total of 1397 cases occurred in southern Illinois, that is in the 34 southern counties, and the mortality rate of typhoid fever in the last ten years was seven per 100,000, as against the state-wide rate of two. Typhoid fever has always been a difficult problem in southern Illinois and I know that both the morbidity and the mortality can be reduced by immunization and a better sanitation program of water, food and sewage. However, as doctor stated, we must not think that the doctors in southern Illinois are not attempting to control typhoid fever, for the proof of my statement is that a large number of persons in this area have been immunized against typhoid fever and diphtheria in the last three years.

The following counties in southern Illinois have put on an intensive immunization program against typhoid fever and diphtheria, as is attested by the following percentages for the period of 1932 to 1935.

TYPHOID FEVER

Union County	26.42	Williamson County.....	24.10
Johnson County	23.10	Hamilton County.....	47.99
Alexander County	43.60	White County	29.39
Pope County	34.60	Wayne County	40.03
Hardin County	47.60	Jackson County	14.80
Gallatin County	49.39	Pulaski County.....	14.70
Saline County	35.79	Lawrence County.....	14.09

DIPHTHERIA

Alexander County	14.65	Hamilton County.....	10.65
Pope County	17.65	White County.....	17.01
Hardin County	29.60	Wayne County.....	11.28
Gallatin County	21.30	Edwards County.....	11.62
Saline County	14.20	Richland County.....	10.01
Williamson County.....	10.01	Wabash County.....	9.46
Jackson County.....	16.01	Clinton County.....	9.84
Franklin County.....	17.79		

The physicians and the nurses too in these counties are to be complimented on the number of persons that are being immunized against both typhoid fever and diphtheria. This does not mean that immunization programs have not been carried on in other southern counties but immunization has not been carried on as intensively as in the foregoing counties.

Tuberculosis is one of our big problems in southern Illinois and will always have a high morbidity and mortality rate until some plan can be worked out whereby the people living in this area can be given sanatorium care and the proper tuberculosis program initiated. We realize that long before the local or state health departments, or other groups, began intensive work in tuberculosis, that the tuberculosis morbidity and mortality began to improve, due to the fact that better housing, better living and better wages made this possible.

However, a decided reduction of the diseases that

have been mentioned by Dr. Montgomery will not be possible until there is a more adequate health service in this area and in other areas in our state. Such a local health service is denied many counties due to the lack of taxable wealth. There are 2,750 small health jurisdictions in Illinois—1,600 of these are township boards of health and 1,100 cities and villages, with approximately only 300 medical officers of health. The pay of most of these medical health officers is so small that many would be ashamed to mention the salary. Within the near future we hope that a state-wide program can be developed which will give the smaller cities and villages and the rural districts a health service, which at this time is not available.

As Dr. Montgomery has pointed out, there are only 45 nurses in public health work throughout the 34 counties in southern Illinois and 21 of these counties have no nurses. There are 30 nurses employed by St. Clair and Madison Counties, leaving only 15 nurses for the other 32 counties in this area. This is not as it should be and I am sure that within a short time this will be corrected whenever funds become available. We realize that we cannot control communicable diseases without an adequate health service, which of course means proper personnel, both medical officers of health and nurses, to assist in this work.

Dr. Lloyd Arnold, Chicago: This is a very interesting paper, and almost a landmark. In the last decade, health officers or part time health officers in the southern communities, in their zeal to make a living, did not take sufficient interest in public health and preventive medicine to actually grasp in the most comprehensible manner the health problems of the community. In the Public Health exhibit in the lobby yesterday afternoon I spent about an hour talking to various doctors who stopped by to look at it. Most of them were from the southern part of the State and a great many of them were rather resentful that, no matter what charts we showed relative to the disease incidence in Illinois, the southern part of the State always showed up the worst. Probably that period of our development has passed. From what we heard from Dr. Montgomery, the practicing physician and the local health officer in the southern part of the State recognizes his problem just as clearly as the Health Department recognizes his problem. I think from that standpoint this paper of Dr. Montgomery is really a landmark. It shows that the education in the southern part of the State by the State Department of Public Health, through its various activities, doesn't need to be carried on to the extent that it has been, and we need to change our tactics now to support the local opinion that is now developing in the southern part of the State. Most of these public health programs grow by certain stages of development, and the general educational stage seems to me now beginning to bear fruit. It is very encouraging to me to hear a health officer from a southern community describe in such a convincing and masterful manner his health problems and the way to solve them.

PNEUMOTHORAX FOR OUTPATIENTS

FRED M. MEIXNER, M. D.,

PEORIA, ILL.

For the purpose of this paper the term outpatients will comprise patients who are not admitted to a tuberculosis sanitarium or have been discharged from such an institution.

Artificial pneumothorax, instituted 40 years ago and brought to this country in 1912, inaugurated collapse therapy in tuberculosis and no form of treatment has shown such rapid development, so that now the technique and indications for its use are fairly established. Formerly 85% of the patients with open tuberculosis died within five years but since the adoption of this form of treatment the time-worn purely conservative regime of tuberculosis therapy has been revolutionized. The professional resistance or inertia to this form of treatment persisted in this country until the World War drew the attention of the surgeons to the thorax as a field of work and now perhaps the most brilliant advancement in all surgery has been in collapse therapy of the lungs. The technique of pneumothorax is comparatively simple and the apparatus required is not expensive, ranging from an ordinary 100 cc syringe and home made manometer to completely assembled pieces of apparatus.

Up to the last few years its use was restricted to exceptional cases and only recently has its use been extended from a small percentage of cases with ideal indications to the point where it is to be considered in every patient that has been diagnosed as tuberculous.

A decade ago pneumothorax was used in only 3 to 5% of the cases, whereas in the past several years 50 to 75% of the cases received the benefit of this modern treatment proving that the days of watchful waiting and pure conservatism are relics of the past. Due to pleuritic adhesions pneumothorax is successful in less than half of all cases under the best conditions but with ordinary sanatorium care not more than 5% would have recovered. It is a safe procedure and with or without pneumolysis and phrenectomy affords the most satisfactory collapse of the diseased area and it can be abandoned at any time if the

disease becomes active in the other lung or the patient's condition warrants.

Due to the successful treatment of advanced cases the tendency to induce collapse earlier and earlier in the disease has gained impetus, but there is a limit to be reached. Pulmonary tuberculosis will never become a surgical disease and unless cavitation or extensive ulceration is present the patient should be given the usual treatment first for a trial period under careful observation before using collapse therapy as an adjunct. In early cases with slight or moderate infiltration, with negative sputum, not much temperature and slow onset, rest and careful management with diligent observation should precede collapse therapy.

Lung collapse when successfully done quickly improves the patient's condition and ameliorates the symptoms, such as cough, temperature, anorexia and dyspnea.

Indications: The indications and contraindications for pneumothorax are now fairly well established. Ideal indications are extensive disease in one lung with little or no disease in the other, unilateral disease with cavitation, repeated or severe hemorrhages without the presence of serious disease in other organs or tuberculosis of other vulnerable organs, although the tendency now is to be more liberal in the interpretation of the formula, for even the presence of a small infiltration process in the contralateral lung is not a contraindication and often these infiltrations clear up more rapidly after the other lung has been collapsed. In selected cases the use of bilateral pneumothorax meets with considerable success. In the past we have often compromised too long with conservative treatment, permitting the formation of adhesions which later prevented induction of pneumothorax or allowed insufficient collapse. The procedure is not employed nearly so extensively as it should be, as too many suitable cases are on rest regime and remain so for too long a time, subjecting the patient to the dangers of hemorrhage and bronchogenic spread of the disease. Each case must be conducted individually, carefully judging the lung compression and need of compression by frequent fluoroscopy. No case should receive a refill without fluoroscopic observation immediately preceding the refill. A fluoroscopy after each refill is a worthwhile observation.

Considerable diversity of opinion exists as to

its use in very early or minimal cases but with increasing study of this type of case no doubt the advantage of earlier and earlier use will be manifest. Earlier diagnosis of minimal cases with consequent observation will find many of these cases suitable for compression long before cavitation and extensive infiltration will occur, based on the theory of lung rest and immobilization.

Selection of cases: All cases are not suitable and extensive and intelligent study of each individual case is necessary to apply the proper treatment for the particular case. Even then, many cases considered absolutely unsuitable will give the best results and vice versa. A rough classification of types of cases can, however, be helpful.

A. Acute Progressive Cases. This type comes on suddenly due to the low resistance to infection and the progress of the disease is more rapid than healing can occur. Results may be good at first but sooner or later the walls break down, the disease spreads and the case terminates unfavorably.

B. Chronic Cases. These patients have more marked resistance with periods of progress of the disease and periods of healing with fibrosis. These cases often give a result under treatment that seemed impossible or improbable, even though the process may be extensive and pleural adhesions prevent complete collapse.

C. Moderately Advanced Cases. Most pneumothorax cases come under this classification and carefully supervised treatment for a reasonable time followed by pneumothorax will benefit a large percentage of these cases. Even though both lungs are involved and fibrosis is extensive, the patient should be given the benefit of collapse therapy. Even thick walled cavities, either large or small, can be collapsed, and the lung freed of pus, an advantage if thorocoplasty is to be performed later.

D. Hemorrhage Cases. The results in these cases, already a spectacular thing to patient and friends, is often most brilliant. 300 cc to 400 cc of air will produce astonishing results in stopping the blood and assuring the patient. It is best not to proceed with too much haste using too much air, or not knowing the condition of the pleura or the extent of the disease, we may produce more trouble than we originally had to battle. The air seems to have a selective action

on the softened caseous areas and a small amount of air may stop hemorrhage from a fairly large cavity. Hemorrhage cases are fairly acute usually and fibrosis is not marked, the cavity thin walled and collapse is easy. The air may be repeated every hour or several hours, with phrenectomy, until results are obtained. Common sense must be used.

E. Bilateral Cases. Involvement of both lungs is no contraindication, provided the lung on one side is fairly good. The correct procedure in these cases is very individualized and may require collapse of the more extensive side, or the more active side, or both sides when using it bilaterally. It is best to start it on one side first, allow time for compensatory adjustment of respiration and circulation, then close the other side.

F. Advanced Cases. While usually hopeless, all advanced cases should be given the chance with collapse. It cannot be foretold which ones will receive benefit and which not, but one case saved makes up for many unsuccessful attempts.

G. Spontaneous Pneumothorax Cases. Carefully, under x-ray and fluoroscope, convert it to an artificial case.

H. Positive Sputum Cases. These are always cases for pneumothorax, no matter how early or how minimal the lesion, and should be collapsed early before adhesions form which may prevent collapse later. It removes the patient as a source of contagion at once. The palliative effect on the early cases in causing realization of the seriousness of their condition is not to be overlooked.

I. Effusive Pleuritis. The fluid should be aspirated and replaced with air. Complete collapse is not always indicated but separation of the pleural walls is necessary to prevent adhesions.

Contraindications:

A. Acute Miliary Tuberculosis. These patients progress too rapidly for any treatment to be of use.

B. Fibroid Phthisis with Emphysema. Even in these cases the presence of a cavity that can be closed is favorable for an attempt.

C. Laryngeal or Intestinal Cases. These usually come under the same category as the military cases.

D. Cardiac and Renal Cases. Mild ones can be treated, severe ones are hopeless.

E. Age is a factor. Over 50 is not a favorable age.

F. Pregnancy, diabetes, pleural adhesions. May be contraindications in exceptional cases.

Home treatment of tuberculosis as a rule is not satisfactory for various reasons which for lack of space cannot be listed here and home care cannot supplant sanatorium care in any case of tuberculosis. However, there are not at present facilities for all patients with pulmonary tuberculosis, making it necessary to provide at least some treatment preliminary to sanatorium treatment or post sanatorium, or in selected cases provide adequate home treatment by collapse therapy as an economic solution of cases that cannot be admitted to sanatoria. With better training of doctors and nurses in tuberculosis and more intelligence and understanding of the problems involved on the part of the public the home treatment will loom larger in the future, for there are no deaths from tuberculosis but rather from the ignorance of it.

Role of General Hospitals. Since the home care of tuberculosis is as yet very unsatisfactory and sanatorium care is as yet unavailable to a large population, there is yet another avenue open to improvement in our treatment of the tuberculosis patient and that is the general hospital. Any general hospital that is properly built and conducted to care for general cases adequately should be able to treat tuberculosis and should be open for chest cases. General care with bed rest with subsequent collapse therapy can serve patients at least cost to the community with greatest good to the patient by giving early hospitalization, early closure of cavities, adequate care and control of open cases. Progress has been made in the fight against tuberculosis but victory is not complete until sanatorium or hospital care is made available for all active cases, about 700,000 in the U. S. with only 90,000 sanatorium beds available. At present there are about 70,000 vacant beds in hospitals and these could serve a very desperate need for tuberculosis patients for general care and collapse therapy.

Dr. Chas. Hatfield recently traced the history of attempts to interest general hospitals in this country in making separate provision for tuberculosis patients beginning with the activity of Dr. Laurence Flick in 1895, the Henry Phipps Institute in 1903, and the recommendations of the National Tuberculosis Association in 1913-

1916 and the American Hospital Association in 1921. At last reports there are 14,601 beds available for tuberculosis patients, which admitted 37,079 patients in 12 months and had 11,318 under treatment on the day of reporting. These figures show that general hospitals have become a vital factor in treatment of tuberculosis, probably due to the growing development of collapse therapy in all forms. There is need in most parts of the United States for education leading to a wider use of general hospitals for tuberculosis treatment. Collapse therapy makes this possible.

The per capita cost in Sanatoria is about \$3000 per patient while in a general hospital it is only \$700 to \$1500 per patient, which, expressed conversely, means two beds available for the same cost. It also allows sanatorium beds to be liberated for special cases, isolation of chronic cases, children with adult type of tuberculosis and will supply beds in communities where no sanatoria are available.

Dr. Hatfield states: "The practicability of the development of special tuberculosis departments in general hospitals has been fully established both by authoritative opinion and by practical experience."

Public Health Aspect. Pneumothorax allows positive sputum cases to be closed and terminates danger to contacts, and the real crusade against tuberculosis, conceived in recent years as pivoting on the control of the open case, must be conceded to be a most tremendous force in the control of the disease. If there were no other justification than the prevention of contact of the open case with the child that would be sufficient plea for increasing hospitalization and subsequent collapse therapy. The City of Chicago through the Municipal Tuberculosis Sanatorium is one of the leaders in dealing with the tuberculosis problem by pneumothorax therapy and in their Bulletin (1933-34 issue) outline a plan of tuberculosis control by pneumothorax therapy. Quoting from the report of the Peoria Municipal Tuberculosis Sanatorium for 1935 Dr. Pollack states: "Full advantage was taken of collapse therapy whenever such treatment was indicated. Through the application of artificial pneumothorax we were enabled to discharge with safety some of the patients by referring them for further treatments to the Pneumothorax clinic."

Conclusions: Pneumothorax for outpatients marks a distinct step forward in tuberculosis

therapy and control. Early collapse therapy is a prime essential in treating tuberculosis in all stages and as a control factor in tuberculosis spread through open cases. It is a definite method for eliminating positive sputum cases as sources of infection.

Pulmonary tuberculosis in the early stages is best treated by rest under careful observation, preferably in a sanatorium. Collapse therapy should be used in early cases after careful application of general care has not stopped the progress of the disease. In moderately advanced cases the sooner it is instituted the better the degree of success.

Collapse therapy is not a routine measure to be applied to every case of pulmonary tuberculosis. Each individual case must be studied and observed to give the right treatment at the best time.

Pneumothorax should be considered in every case except the very lightest (if controlled by bed rest and general care) and completely hopeless ones. Evolution of pneumothorax therapy has resulted in its greatly increased applicability. Procedures now shown to be successful would have been thought extremely radical only a short time ago.

The early hospitalization of tuberculosis patients is still a serious problem and the trend toward treatment in general hospitals is a proper and logical solution for the control of the infection and treatment of the individual case and collapse therapy in the hands of trained phthisiologist done in general hospitals should make available to many patients, that now cannot be admitted to sanatoria, the chance of recovery. The providing of beds in general hospitals for convalescent cases would fill unoccupied space in general hospitals and release it for more patients in sanatoria, as well as reducing the cost per patient with tuberculosis. Pneumothorax makes it possible to treat more patients at home successfully thus relieving the strain on sanatoria, gives the patient earlier and more successful treatment, and makes it possible for their private physician to care for them instead of going to an institution, which is quite a factor in aiding recovery in many cases of tuberculosis.

DISCUSSION

Dr. Allan J. Hruby, Chicago: It is very interesting indeed to hear a man in general medicine read a paper on collapse therapy and do it in such a masterly way;

do it, in fact, in a way that would reflect credit on any of the men doing the work in our institution in Chicago.

It was in 1931, under Dr. Frederick Tice, the President of our Board of Directors, that the ambulatory clinic for the treatment of tuberculosis was instituted. The reason for the institution of an ambulatory clinic lay in the overcrowding of the public institutions in Chicago, Cook County and Chicagoland.

The Municipal Tuberculosis Sanitarium in 1931 had about 750 patients on the waiting list, patients that were getting progressively worse and dying before they could get an available bed in the institution. Prior to 1931 the Sanitarium clinics, as you know, served merely to keep the patient under observation and administer the ordinary symptomatic treatment.

We started field pneumothorax in a meager way. Prior to 1931 we had a small ambulatory clinic in connection with the Municipal Tuberculosis Sanitarium that took care of about 25 patients. At the end of 1931 the number had increased to 111 cases and at the present time, we have almost 1,000 patients receiving pneumothorax in this ambulatory clinic.

Dr. Meixner has mentioned some of the advantages of this ambulatory treatment. The first advantage is the individual betterment of the case, getting them out of bed earlier, back to work and into useful life in a much shorter period. The second advantage is the public health aspect incident to the exclusion of the bacillus from the sputum.

In our ambulatory clinic, 40% of the cases have been converted from positive to negative. At the Sanitarium proper, with other forms of collapse therapy available as well as pneumothorax, conversion from positive to negative has reached 60%. At the Sanitarium collapse therapy has had great economic value. It has accelerated the Sanitarium tempo to such an extent that we turn over the institutional population every year. In other words, Chicago through the medium of collapse has practically built another institution of equal annual capacity to the present one, namely, 1,250 beds.

As the last advantage, I must mention the great educational value to the tuberculous population and the fact that the problem has made Chicago collapse therapy conscious.

Another great point Dr. Meixner brought out was the place of the private hospital in the treatment of tuberculosis with pneumothorax and also the matter of the choice of operation. As seen by the charts, pneumothorax made the greatest gain at the Municipal Tuberculosis Sanitarium. Pneumothorax is possible of wide application owing to the fact that it can be handled readily in a private hospital. After two weeks' preliminary stay in the hospital the refills may be continued either in the outpatient department of the hospital or in the patient's home. ●

Next week, June 1, we are inviting the various medical superintendents and chiefs of staff and superintendents of the private hospitals to a luncheon at

the Sanitarium to present this problem to them. We do so because we realize that the private physician, the general practitioner of medicine like Dr. Meixner, is the man in the front line trench in the fight against tuberculosis.

In concluding, Dr. Hruby referred to the Municipal Tuberculosis Sanitarium statistical charts which showed the advantages of the treatment. These advantages were listed as follows:

1. The clinical benefit of the treatment.
2. The percentage of conversions.
3. The low mortality of the operative procedures.
4. The marked increase at the Sanitarium of pneumothorax as compared with operative measures, showing pneumothorax as the procedure of preference.
5. The lowered tuberculosis mortality in Chicago in the last few years.

Dr. Fred M. Meixner, Peoria (in closing): I want again to call attention to the effect of pneumothorax on the prognosis. When you consider most of these cases were considered too far along for bed rest and hygienic treatment to do any good and then we reduced this mortality rate so tremendously by collapse therapy, the influence can certainly be appreciated on the prognosis.

I also want to call attention to the fact that it brings the history and treatment of tuberculosis back into the field of general medicine. For a long time tuberculosis has been taken out of the field of general medicine, and the physicians have sort of felt it no longer had a place in general medicine. Now pneumothorax and collapse therapy will again bring it back into that field. It will make the general practitioner again tuberculosis conscious and call his attention to the proper treatment of this very unnecessary cause of death.

I think pneumothorax is a better answer to the problem of state medicine in treating tuberculosis patients than building more sanatoria, and there is no question but the subsidization by the state of tuberculosis beds in general hospitals would be the thing that would serve the purpose better than building institutions where, as Dr. Hruby has said, the turnover at best can be so slow that the average patient in the rural communities and smaller towns does not get the benefit of adequate treatment.

I was looking at the chart in the exhibits and in 45 counties below Sangamon County there is one tuberculosis sanitarium and only three tuberculosis or chest departments in general hospitals, and those are in private hospitals. You can see the tremendous amount of work that can be done just in the southern part of the State of Illinois in making available collapse therapy, which is intelligent tuberculosis treatment, and the intelligent control of tuberculosis is made possible by this method of treatment.

A FEW SIMPLE RECOMMENDATIONS TO THE GENERAL PRACTITIONER IN HIS CARE OF ARTHRITICS

RALPH PEMBERTON, M. D.
PHILADELPHIA, PA.

A great need today in the field of arthritis is extension of sound information in an easily tangible way to the great mass of practitioners who first see the disease. What the general practitioner needs to know is not the subtleties which enter into controversial doctrines but the importance of a broad-gauged view which sees and seizes the problem as a whole, recognizes it as necessarily open to many influences and proceeds to bring these to bear cautiously but as completely as possible. There is no opportunity in this brief paper to discuss etiologic considerations and confession must be made at the outset that all the links in the chain between etiology and the end results of arthritis are not known. Many circumstantial facts are known, however, which permit of adumbrating the nature of the problem and of laying down principles of therapy of the first importance.

Arthritis is certainly not a disease of joints alone although these are conspicuously involved. It is a systemic disease and, by way of epigram, one can almost say that arthritis is no more a disease of joints than typhoid fever is a disease of Peyer's patches. Confession can therefore be made at the outset that, in the opinion of the writer at least, errors often inhere in the approach of some clinicians to the problem.

In common with most mental concepts, the notion of the nature of arthritis is determined by individual experience, such as the types of cases one sees and by the phases of the syndrome for which one looks. For example, observer A may see chiefly patients in whom the disease has run a devastating course, with the production of deformity as the most evident residual symptom. Such patients are to be seen in the wards of public institutions and the observer may incline not unnaturally to regard therapeutic measures as of limited avail. Again, another observer might easily believe, from an experience started at the autopsy table and finished at the microscope, that proliferation of the synovial

membrane constitutes the only essential feature of atrophic arthritis and that degeneration of the articular cartilage constitutes the only essential feature of hypertrophic arthritis. Each of these observers would obviously fail to see the disease as a whole. This rough simile needs further elaboration but illustrates perhaps the difficulties inherent in the principle of the limited outlook.

Observers entertaining such viewpoints as the above become impressed with the significance of their observations and tend, not unnaturally, toward the exclusion of other considerations. Indeed, upon such premises, strong negative postulates arise which, in our present state of knowledge, are philosophically immature and clinically inadequate. There is, to the writer at least, a strong nucleus of truth in most well considered points of view relating to the disease. Few of these points of view are wholly irreconcilable, one with another. Controversy concerning them is, indeed, less important than is the duty of coordinating them into the best practicable whole so far as living arthritics are concerned.

The modern concept of arthritis starts with knowledge of the organic pathology of the articular tissues which divides the syndrome into the two types, atrophic and hypertrophic. This knowledge of the purely morphologic changes is important but, notwithstanding, it is of limited significance. There is no common agreement that the disease is primarily in these tissues and it is certainly not confined to them. Many persons belonging within the category of the rheumatoid syndrome go through life with little or no true arthritis. It is indeed possible to observe arthritis so obliquely as to regard it as a localized anatomico-pathologic curiosity and to miss appreciation of basic features that must precede this.

It is necessary in both types to accept the probability of undetermined factors. It is unnecessary, however, to make all of these factors radically different for the two groups. By the same token, much has been said and written regarding the different treatments necessary to the two types, atrophic and hypertrophic. I believe that much of this derives from a *priori* views as to what treatment should be on the basis of the interests of the observer. We are

definitely not in a position to deny to either type the benefits from measures useful at times or frequently to the other type. This statement has particular relevance for the general practitioner in that it is doubtful whether he can be expected, for some time to come, to distinguish accurately between the two types; and, indeed, about thirteen per cent. of all cases offer great difficulties to any observer. At all events, it may be fairly said that the broad therapeutic generalizations to be outlined here offer no hazards to any arthritic when conducted compatibly with broad medical judgment.

The arthritic, in all except the early stages perhaps, may be ill in many ways. Few experienced clinicians would deny that the disease manifests itself, in part at least, in disturbances not only of the locomotor and muscular systems but also of the vascular and nervous systems. Some of the writer's patients have indeed had psychopathies which have led them to jump from the upper floor of an hotel. The cold hands of the atrophic arthritic are almost among the clinical landmarks of medicine. There is less unanimity regarding disturbances of the gastrointestinal tract but, in the opinion of the writer and of others, these disturbances constitute a significant feature, though of varying importance, in the full-blown syndrome. Whether changes in the systems of the body precede, parallel or follow the disease is, in a therapeutic sense, relatively unimportant. It is at least certain that these changes do not always *follow* the disease alone. These changes, whatever the etiology of the arthritis, are usually more or less open to influence. The measures known to be valuable to this end are mostly simple in principle and some of them are simple in practice. Certain recommendations can be advanced, therefore, which unmistakably strike at the trunk, if not at some of the roots, of arthritic invalidism.

If one recognizes the existence of disturbances in the vascular, nervous, gastrointestinal and locomotor systems one can begin treatment with one prescription which may indeed be almost regarded as a blanket form of therapy, and, in lesser or greater measure, reaches all of them. This prescription is for intelligently ordered rest. The first recommendation, then, to the general practitioner is to put his true arthritics to bed. There is no time to particularize here as to the

many things which this accomplishes. Information in this connection must be sought elsewhere.¹ Suffice it to say that the warmth of the covers alone will open many otherwise closed capillary channels. Assumption of the recumbent posture relieves the sympathetic nervous system of that activity which determines the active blood flow, throughout the body, necessary to maintenance of the erect posture. In recumbency, the posited organs of the severe arthritic are spared their customary drag and are started on the path of relaxation and unhandicapped function. It is important at this point to caution against that unthinking prescription of rest which allows ankylosis to arise in atrophic cases. These subjects should put their involved joints through their given range of motion at least once daily.

These considerations possibly explain, in some part, the return to gainful employment of sixty per cent. of patients admitted to the Government Hospitals of Sweden devoted to the care of arthritics.

Recommendation 1 to the general practitioner: With the exception of early, sthenic cases, treatment of arthritics as a group can best be inaugurated by intelligently conducted rest, which usually means essential confinement to bed.

With the institution of a better capillary and nervous equilibrium in the sick arthritic, attention can be given to the important and widely present factor of infection. Only at this stage, in the writer's practice, is anything more than analysis undertaken. There is here involved a wide equation between the reaction of tissues towards infection and the reaction of infection towards tissues. The influence of one upon the other is a function of their respective potentials, both of which are variables. Many precipitating infections have been removed at the wrong time with the result that the arthritic as a whole was made worse. Incidentally the writer is convinced that, whereas on the one hand the removal of infection by no means constitutes the whole story, analysis for focal infection is very far from being adequate in more than relatively few centers in this country. Indeed, in the opinion of the writer the analysis for focal infection in arthritis is almost a specialty within a specialty.

1. Arthritis and Rheumatoid Conditions; Their Nature and Treatment—Lea and Febiger, Philadelphia, 2nd edition, 1935.

Gingivitis may be a greater menace than are abscessed teeth and the gall bladder is usually much better analyzed than is the prostate. But whether analysis and treatment be adequate or inadequate, the arthritic will respond better if the initial approach be as above outlined. So prepared is the soil of the arthritic and so delicate his equilibrium that a minimal infection will keep him unbalanced.

Recommendation 2 to the general practitioner: Except in early and mild cases, focal infection should be removed in arthritis, *only* after optimal "physiology" has been obtained in the arthritic sufferer, following intelligent rest in bed.

There are very few persons pretending to any qualifications in the biological field who would deny that the state of nutrition of the subject is an important consideration in disease at large and particularly, perhaps, in relation to infection. Indeed, the whole problem of subacute infection must be regarded today in the light of those ill-defined factors which inhere in the availability and utilization of many kinds of foodstuffs, of which the vitamins are exemplars. In this relatively unmapped congerie are to be considered specific organ tissues, various replacement therapies and such a balance of foodstuffs in general as will augment rather than handicap the operation of these factors. Nutrition in arthritis should not be understood as determined only by obesity or emaciation; it signifies a much more fundamental relationship than this and cannot be successfully denied, in any long-range view, as partly determining the precipitation of, or the recovery from, conditions which infection, for example, induces.

Recommendation 3 to the general practitioner: The chronic arthritic, in all except early, robust cases, should in general be given his full caloric requirement but rarely more when at rest. This should be so arranged as to give him ample protein in the form of meat, milk, etc. (and incidentally there is some evidence that the arthritic sometimes suffers from a low plasma protein); ample vitamins, in which the attempt should be made to administer some of them in somewhat concentrated form: an ample supply of green vegetables and fruits, not only for their vitamin but also for their carbohydrate content: and, finally, a reduction of the concentrated carbohydrate foodstuffs, such as cane sugar and the

heavier flour products. It is well recognized that insufficient protein or excess of carbohydrate may render inadequate otherwise adequate quotas of at least four vitamins. Among arthritics the gastrointestinal tract frequently shows ptosis, stasis and hypochlorhydria which call, respectively for attention.

Turning again to the disturbances of physiology briefly referred to earlier in the text, these must be recognized as frequently present. Of these disturbances, that in the capillary beds is among the most prominent. This is to be seen in the cold hands and, perhaps, in the tender and eventually wasted muscles, of the atrophic arthritic especially. No drugs in the pharmacopoeia will correct or even influence this condition. The field of physical therapy, meaning by this principally heat and massage, offers the only specific measure, sound in principle and clinically successful, available to this end. Granting that the metabolic errors in the muscles and other tissues of the arthritic are not fully understood, it is clinically established that heat and properly given massage will do more than will any other single measure to rectify some of the disturbances characterizing this aspect of the disease. These disturbances furthermore cannot be regarded as isolated aberrations. A philosophical perspective requires that they be seen in conjunction with function of the organism as a whole and clinical experience teaches that ministrations in this connection have systemic consequences far beyond the mere surface outcrops of the disease in the form of symptoms. Here is a philosophy which the general practitioner, by definition, may have difficulty in living up to but must finally understand.

There is in the country today no greater dearth of therapeutic desiderata, in view of the knowledge available in this field, than exists in relation to skilled physical therapy. The profession must learn the importance of this agency and it must then learn how to prescribe it. The profession must learn to appreciate and utilize the services of persons trained in this field. The profession must also learn to demand a vastly greater available quota of such persons than now exists.

Recommendation 4 to the general practitioner: He must bring to bear on his arthritic subjects, the enormously reparative forces of physical therapy, meaning essentially heat and massage, in such a restrained and cautious manner as to

undo in a mechanical way, to some extent at least, the circulatory, lymphatic and metabolic errors which widely exist. Physical therapy should not be focused upon the sore joints. It should be directed chiefly at somewhat removed sites. Like other potent instruments physical therapy is capable of as much harm as good, especially in hypertrophic arthritis. No single verbal message, however, will cover this huge field.

The symptom which leads the arthritic to seek advice is usually pain. For generations the polypharmacy with which our profession has been cluttered has led physician and layman alike to look to drugs for relief of this symptom. Only now is there growing appreciation of the fact that, for the most part, the relief of pain should depend upon modification and correction of the physiologic disturbances which give rise to pain. Perhaps in no other disease in medicine is this relationship so clearly to be seen. In almost no other disease in medicine is it possible to bring to bear so many kinds of sound physiologic considerations on the features of the disease. The writer is satisfied that anodyne drugs are greatly abused in this field. The writer is satisfied that adequate analysis of arthritics and an adequate therapeutic approach to the disease, obviates the necessity of three-fourths of the pharmacology exhibited today toward arthritics.

The salicylates are of value to meet emergencies and should be reserved for this purpose. Sedation of the nervous system is often valuable at the outset of therapy. Applications of hot, saturated magnesium sulphate may be very comforting. In the long view, constructive tonic medication, such as very small doses of strychnia, arsenic and liver extract, play a significant role. Their influence is exerted, however, only when the strain of living is removed, when the machinery of the human automobile is idling and when the gentle therapeutic stimulus given in one direction is not negated by overwhelming and improper demands in another. Hypodermics of strychnia have not won many sweepstakes for tired race horses.

Recommendation 5 to the general practitioner: The use of drugs does not constitute the way out from arthritis. Anodynes should be used chiefly or only at the outset, while those measures are being brought to bear which modify or correct the disturbed physiology productive of pain.

Arthritics need a betterment of many phases of their physiology and not subjugation to further intoxication from the "coal tar" products. Opium is contraindicated in the treatment of arthritis and has not for years been administered in the writer's clinic.

A natural corollary to the recognition of infection as a factor in precipitating arthritis has been and is the use of vaccines. Here is a field which no one has yet plumbed to its depths. Because of the importance which the writer has long believed to be attached to the physiologic deviations accompanying the syndrome of arthritis, he has perhaps been regarded as hostile to vaccine therapy. This is not the case, and no open-minded observer can successfully deny theoretical, and indeed some actual, value to this agency. However, much that has been regarded as "specific," in the field of bacteriology, is now known to depend upon more generic phenomena than had been previously thought. There is no question furthermore that vaccines have been most unfortunately abused.

The truth of this situation is, probably, that vaccines are available to a certain proportion of cases only. In the writer's clinic this proportion is not much more than 20 to 25% of the whole. Most of our subjects do exceedingly well without the use of vaccines. In the more refractory residuum of cases, use of this instrument is justified and, indeed, needs further dispassionate investigation. Above all it needs cautious and conservative administration, when it is used, to avoid adding to the burdens already existing.

Recommendation 6 to the general practitioner: Despite the attractive implications attaching to the definite role of infection in arthritis, the use of vaccines should be reserved for a small and critically selected group. In this field they need further study. An initial approach to the treatment of arthritis through the medium of vaccines frequently suggests unfamiliarity with the problem.

The arthritic acquires, or starts with, structural inadequacies. These may take the form of kyphosis, narrowing or fixation of the thoracic cage and partial angulation of joints. The last named often require the application of principles within the orthopedic field. Kyphosis and narrowing of the thoracic cage can usually be influenced, if not corrected, by the general practitioner if he is adequately aware of the forces

operative to produce, or, in reverse, available to undo, these structural errors. Rest in mild opisthotonos may correct kyphosis and benefit visceroptosis. Breathing exercises will expand the narrow or fixed thoracic cage. Abdominal and breathing exercises will compensate for reduced vital capacity of the lungs and for at least some of the secondary consequences of wheelchair inactivity.

Recommendation 7 to the general practitioner: The attempt must be made to prevent and undo angulation deformity, by maintenance of corrective postures and intelligently directed exercises, beginning in bed, whether this angulation has to do with the chest, the spine, or, as more usually understood, the joints themselves.

The above seven recommendations to the general practitioner constitute nothing more than some basic considerations upon which a more elaborate therapeutic superstructure should be raised. Therapy of arthritis cannot be compressed into a capsule or epigram. Nearly every measure of value almost constitutes a specialty by itself. There is probably no other disease in which such wide demands are made upon the general practitioner. It must be accepted that, alone, he cannot be expected to cope with the problem adequately in more than a few instances. In the experience of my colleagues and myself, about 75% of arthritics should experience great betterment or complete arrest; 20% are more refractory. In this group some factor, probably related to infection, dominates the field so completely as long to resist therapy. In about 5% of cases therapy is of no avail. In the normal man or one sick in other respects, the same infection may have no arthritic consequences and the difference between him and the arthritic is one of a pre-existing equilibrium.

No experienced clinician needs to be told that clinical medicine often runs ahead of precise knowledge of the data upon which it rests. This is somewhat the case in arthritis, notwithstanding many additions to our knowledge, and it is the duty of those who would treat arthritics to see that this broad truth is appreciated. Let us be careful, as has been well said, not to reject the bread of clinical experience while accepting the stone of laboratory experiment. Those who would delimit the treatment of arthritis to the small potential which derives from

pathological anatomy only, or from attractive but theoretical bacteriologic implications, must adduce more convincing evidence than now exists, to justify their course. A wide-range view which includes basal considerations such as are above outlined can, at worst, do no harm. At best, it reaches known deviations, and perhaps others not even suspected, which are certainly beyond the influence of drug or antigenic therapy in our present state of knowledge.

The general practitioner affords the backbone of the medical profession and bears its greatest burden. He ill deserves the too-frequently crushing burden of chronic arthritis. Let him therefore sound and learn to sail the deeper waters of this great syndrome in order that his arthritic patients may not be wrecked on the shallows of inexperience.

2031 Locust Street.

CROSS-INFECTION: ITS PREVENTION IN A CHILDREN'S HOSPITAL

MAURICE L. BLATT, M. D.

CHICAGO

It is incumbent upon the hospital receiving children to keep its wards open at all times for the reception of such children as need service. The clientele to which it caters is often a clientele with a low degree of immunity to those infections which are prone to spread rapidly from the general population to such an institution. It is important, therefore, that individuals entering this hospital be recognized as possible carriers, either convalescent from diseases which may still be transmissible or incubating a disease on admission to the hospital. In order to check the spread of infectious diseases, not only in the hospital but in the camp, in the asylum and in all institutions where a large number of non-immune are congregated, extreme care in organization and administration is essential.

In the organization of a children's hospital, departmentalization is a primary requisite. An examining room is necessary where complete history and physical examination and such laboratory work may be made on the incoming patient as is vital. It is necessary that the

examining room of the children's hospital be separated and distinct from all other departments in that hospital, so that the child applying for admission with pneumonia, bronchitis, upper respiratory tract infection or any other ailment may be segregated, if found to have chickenpox, measles, whooping cough, scabies or any other infectious disease.

An examining room is the first important step in the prevention of cross-infection in the hospital. The second step in the prevention of cross-infection in the hospital is a feature which we have instituted within the last two or three years at the Cook County Hospital in Chicago and at St. Vincent's Orphanage. No child is admitted to the general hospital, no matter what his disease, unless he is given whole blood from a parent. Wassermann and Kahn tests are done on parental bloods before administered, except where an emergency exists. Those individuals who are admitted without such whole blood, because no parent accompanies him on admission, are given whole blood at the first visit of the parent, and this treatment is continued in the event any cross-infection occurs in the ward in which he is placed.

According to this system of hospital departmentalization, the second department into which the child goes is an observation ward. Observation wards in a hospital may be private rooms, cubicles, small wards or a cluster of larger units. The fewer the number of individuals occupying a given room during the period of observation, until laboratory reports and further physical examinations may be completed, the fewer the number of cases of cross-infection that will occur.

Careful observation by attending men and residents, trained to detect the early signs not only of the contagious disease but the signs of the disease just fading, are essential.

As these children have received whole blood, we anticipate a mild degree of protection; sometimes complete and often not complete but modifying the disease so that it may be controlled in the hospital. In the majority of instances the protection seems to us to be complete.

As these children enter our institution, a contagious disease card is made out. This card shows the date of any contagious disease which this child has had previously and, in addition,

the date of immunization against the infectious diseases which we can immunize against, so that in picking up a patient's card, one can quickly recognize whether the child has had measles, chickenpox, mumps or whooping cough; and in the event that a case of one of these infectious diseases occurs in the ward, one recognizes immediately which child needs protection. Furthermore, in some instances, in the presence of an epidemic of a disease in the community, where a number of such cases may be admitted, it is possible to so place one's children in larger wards as to minimize the opportunity for a hospital epidemic. For instance, if three children are placed in a single ward and two have already had measles, the danger of an epidemic in such a room has been eliminated before it occurs.

The problem of carriers is always taken under consideration in our institutions. In the event of the occurrence of an epidemic or in an epidemic disease in one of our wards, the entire personnel in contact with this ward is examined. It is definitely understood that diseases such as chickenpox, whooping cough, possibly measles, certainly smallpox and certainly typhoid fever may be carried by individuals who have not the disease themselves. It is definitely known that individuals, nurses and camp personnel, caring for individuals with these diseases may themselves become carriers without contracting the disease and pass it on to others.

Epidemics of epidemic meningococcus, meningococcal meningitis, whooping cough and chickenpox have been seen by all of you in institutions where immediate contact between the original case and the secondary case never occurred. We recognize that the occurrence of a single case of infection in a room means the complete isolation of every member in that room. The case with infection should not be moved to another room in the same building but should only be moved when it can be removed to where it belongs, to a contagious hospital.

Having had a case of acute infectious disease in a ward in the institution, the next important step in the prevention of an epidemic of the same disease in the institution is the passive immunization of all individuals who were in contact with the original case.

Most interestingly, the surgical wards and

the orthopedic wards are commonly affected by scarlet fever. Its occurrence in the surgical ward can be easily explained. The child enters the hospital with an acute cervical adenitis. A throat culture is made which is negative; no history of scarlet fever is obtained, and the case is operated upon. A large amount of pus drains, and from time to time this child enters the dressing room and is dressed by an attendant who afterwards dresses other cases. This type of treatment in the surgical ward is undesirable and, in the Cook County Hospital, no longer occurs. A case of cervical adenitis, questionable as to its etiology, is not operated upon in the surgical department except in the event it can be given entirely isolated treatment and dressing after operation.

Visitors to the children's ward are common carriers of infection. In our hospital intimate contact between visitors and the children is not allowed. Our premature wards are closed off; our infant wards are closed off. Mothers and fathers may see their children in the children's hospital as they see their children in the city contagious hospital under Dr. Hoyne's direction, that is through the windows of glass enclosed rooms. We do not encourage visiting; we discourage it. We do not welcome visitors to children whose lives we believe to be in danger.

Masks are valuable in a Children's Hospital. A number of infections of the respiratory tract decrease in those departments of the hospital in which masking of nurses and attendants is strictly enforced.

Our experience with the impervious deflecting mask at St. Vincent's Infant and Maternity Hospital has warranted its use for the past three years. Nurses in the premature ward at the County Hospital are constantly masked—no one is allowed in the ward unmasked.

The discomfort and inconvenience of the common gauze mask is in a large measure overcome by the form fitting cellophane mask.

As to specific immunization, one cannot say too much. As the general trend of active immunization of the populace outside of the hospital increases, to just that degree will the hospital cross-infection decrease. As diphtheria immu-

nization, scarlet fever immunization and whooping cough immunization increase in the general populace, through the efforts of the pediatrician and the public health official, to just that degree will the percentage of cross-infections in these diseases fall, and it is on the future of preventive inoculation that we pin our greatest hopes.

I have two slides that I would like to show you, showing our efforts at hospital organization and administration.

185 N. Wabash Ave.

CHILDREN'S HOSPITAL ORGANIZATION AND ADMINISTRATION

I. Hospital Organization—(Departmentalization)

- A. Contagious Pavilion
- B. Smallpox Hospital
- C. Children's Hospital

1. Surgery

- (a) Receiving and observation ward
- (b) Operative Ward
- (c) Convalescent Ward

2. Orthopedic

- (a) Receiving and observation ward
- (b) Operative Ward
- (c) Convalescent Ward

3. Medical Receiving Room

- (a) Medical Observation ward or
 - (a) 1. Dysentery Ward
 - 2. Typhoid Ward
 - 3. Tuberculosis Ward
 - 4. Cubicles for clean cases
 - 5. Surgical Ward
 - 6. Orthopedic Ward
 - 7. Contagious Hospital

(1) Individual Rooms

- (a) Suspect Contagion
- (b) Contact Contagion
- (c) Convalescent Contagion
- (d) Carrier

(2) Cubicles

- (a) Suspect Tuberculosis
- (b) Suspect Dysentery
- (c) Suspect Typhoid
- (d) Streptococcus throats
- (e) Upper respiratory infections
- (f) Pneumonia
- (g) Pertussis Bronchopneumonia
- (h) Transfer from Contagious Hospital

(3) Shock Room

- (a) Any patient needing shock treatment

(4) Open Rooms

- (a) Non-Infectious Medical Cases

II. Hospital Administration

Cases are routed on basis of classification by examining room physicians.

A. Contagious—to Contagious hospital

B. Contagious Contact—rigid isolation until:

- (1) Immunized
- (2) Period of incubation passed
- (3) Disease contracted
- (4) Sent to Contagious Hospital

C. Contagious Complications—isolate until cleared clinically or culturally.

1. Scarlet glands, otitis media or desquamation
2. Pertussis bronchopneumonia
3. Diphtheria carrier
4. Hemorrhagic nephritis
5. Measles bronchopneumonia

D. Non-Contagious

1. Observation Ward 72 hours

- (a) History
- (b) Physical Examination
- (c) Cultures
- (d) Smears
- (e) Clinical Course
 1. Negative—to treatment ward
 2. Positive—to proper wards as
 - (a) Tuberculous Ward
 - (b) Gonorrhea Ward
 - (c) Syphilis Ward
 - (d) Dysentery Ward
 - (e) Typhoid Ward
 - (f) Pneumonia Ward
 - (g) Contagious Hospital

E. Prematures—to Premature Ward

F. Infants—to

1. Shock Room
2. Infants Ward
 - (a) Feeding Room
 - (b) Respiratory Infection Room
 - (c) Enteral Infection Room
 - (d) Clean Room
 - (e) Isolation Room

G. Orthopedics—to Orthopedic Ward

H. Surgical—to Surgical Ward

DISCUSSION

Dr. Archibald L. Hoyne, Chicago: Dr. Blatt has accomplished a splendid piece of work in the children's department of the Cook County Hospital. If he had presented a resumé of many of the past experiences in the hospital I think you would all be in a much better position to appreciate just what he has done.

There is no doubt that, when children are admitted to a hospital of this kind, one of the primary things is an observation ward. With isolation facilities, new patients coming in during the incubative period of a disease can be prevented from starting an epidemic.

One of the things that helps very much, of course, is the matter Dr. Blatt spoke of, the immunization of all children as they are admitted. On the other hand, in

respect to extremely young children, you might wonder how far it would be necessary to go. As a rule, children under six months of age do not have diphtheria, scarlet fever or measles; but they may contract whooping cough or chickenpox or smallpox, if they are not protected. Erysipelas, diarrheal diseases or gonorrheal vaginitis may occur at any age.

The giving of whole blood to every patient admitted is a procedure that the average institution would be unable to carry out. Moreover, it seems to me that such a plan is of doubtful value in the extremely young infants.

If I am not mistaken, Dr. Blatt made some reference to vaccination as being safe after six months of age. I would like to ask him what the objection is if done at a younger age. I have vaccinated infants as early as fifteen minutes after birth. That is sooner than you would ordinarily do it, but at three to four months I think the child is not likely to have any serious trouble. The local reactions are very much less in the early months than they are in the later years. I have never seen any serious consequences from this vaccination unless scratched by unclean hands.

It is rather unfortunate that we still need smallpox hospitals. Smallpox is one disease above all others against which absolute protection can be had. It seems all out of the proper order of things to think that in this day we still have to talk about having a smallpox hospital in a city like Chicago. Yet even if we have only one or two patients a year, the small cost of maintaining a separate institution of that kind might be the means of preventing a great epidemic of smallpox and an immense loss of money through loss of business in the community. Such factors are important as well as the disability of individuals and possible death.

Dr. A. J. Fletcher, Danville: I was especially interested in Dr. Blatt's routine in giving whole blood injections, from the parents to the children upon entering the hospital. I would like Dr. Blatt to explain how much blood is given, where is the best place to give it, and the object in giving it.

Dr. Blatt, in closing: Regarding smallpox vaccination, I have never advocated the early vaccination of infants. My reason for so doing has been because I have felt that during the very early months of childhood, infection or irritation of any type, is prone to produce gastrointestinal, if no other type of disturbance. The unstable digestive apparatus of the tiny infant makes any unnecessary irritation undesirable, and I have, in my private work as well as in my institutional work, set the date of six months as the date when I believe a sufficient stability had been achieved so that it might be accompanied by no danger. I furthermore have another rule in regard to smallpox vaccination, and that is, I don't vaccinate against smallpox in the summer, first, because I feel that the vaccine is likely not to be potent because of its transportable weakness, and secondly, because the frequency of bathing necessary in the summer months is more prone to produce local in-

fection than a partially covered arm with less bathing in the winter. We use alcohol to cleanse our smallpox vaccinations, consistently, and by so doing produce an aesthetic scar that appeals to the parents in our private practice. Our vaccination is done in accordance with the multiple pressure method of the Public Health Department of the United States. We have scars no larger than the eraser on a lead pencil, and in our experience of vaccinating in the winter have a vaccinating efficiency of something over 95%. My experience in the summer has been that the scars may be larger because of infection, or the scab being pulled off before healing is complete, and consequently I advocate six months, and I let it run even a little longer if it is in the middle of the summer.

Regarding the whole blood, we take 20 c.c. of whole blood from the mother's elbow vein, in a 20 c.c. syringe or 30 c.c., and inject that directly into the child's buttocks. In the older child we not infrequently use 30 c.c. of whole blood. It is our belief, based upon our experience with measles, chickenpox and whooping-cough, that immune bodies exist in the blood of most adults; immune bodies not only to those diseases whose organisms are known, but to other diseases such as the common cold, and perhaps some types of streptococcal infection. We believe that by so injecting our incoming patient we can produce a degree of passive immunity equal to the injection of one-half the same amount of normal human serum into the same individual. Furthermore, we believe that in rheumatic infections, in the endocarditis, in choreas, in pneumonias or influenza, the giving of whole blood in this way is in no way harmful, does not produce shock, and seems to us to be beneficial.

FACTS NOT TO BE FORGOTTEN

1. Children do not outgrow "cross eyes." A large proportion may be cured, and binocular vision obtained without operation, if treatment be started before the fifth year. "A child who is old enough to squint is old enough to wear glasses," according to an old Philadelphia maxim.

2. Failing vision is so frequently a danger signal, that it demands professional direction. Two pairs of glasses will not correct chronic glaucoma, chronic iritis, retino-choroiditis, retinal hemorrhage or detachment, hypertension, optic atrophy or cataract.

3. Violent temporal neuralgia, with vomiting, may be due to acute glaucoma or iritis, not a digestive upset. Take a look at the eyes!

4. Morning headaches are not from eye strain unless the eyes have been worked late the night before.

5. Normal eyes depend upon muscles for their ability to function. When the body is tired, the eyes are tired. You can't work all day and read all night.

6. Phenol and glycerin ear drops never cured an otitis media or a mastoid, but usually start an external otitis, complicating the picture.

7. Soap and water in the ears, for cleanliness' sake, has increased the otologists' clientele, on account of the scaly itching meati it causes. The patient, seeking

relief from this annoyance, scratches the ear with a hair pin, match or tooth pick, readily infects the skin through its damaged epithelium, resulting in scabs and occluding exudate, or furunculosis.

8. Most acute suppurations of the ear will get well, if they have early drainage, by incision of the drum, or spontaneous rupture. If the drainage keeps up for two weeks, an otologist should be consulted.

9. An X-ray is only a factor toward diagnosis of mastoid and nasal sinus diseases.—Charles Lukens, M. D., F. A. C. S., Toledo, Ohio.

TEN COMMANDMENTS FOR SOCIETY

I. Thou shalt put good laws upon thy Statute Books, and none other.

II. Thou shalt have good policemen upon the beat and honest detectives upon the trail.

III. Thou shalt appoint good Judges to the Bench—those who know well the institutions to which they consign the lawbreakers.

IV. Thou shalt give fair, unprejudiced, unpolitical trials, where bribery and corruption may not be found.

V. Thou shalt not pass determinate sentences, for what man knoweth the end from the beginning.

VI. Thou shalt not kill according to Law.

VII. Thou shalt not steal the chances of the victims of circumstances, but shalt make a complete diagnosis (physical, mental, spiritual and social) of each one who may be sentenced.

VIII. Thou shalt labor more diligently towards the reformation of him or her who shall be incarcerated than towards inquisitorial punishment.

IX. Thou shalt never return into Society those who are incurably anti-social and incapable of reformation, so they may not continue to kill and to despoil and to destroy.

X. Thou shalt do always that which is just and right and good towards those who must be rehabilitated upon release from behind the stone walls and the steel bars.

OSWALD C. T. WITHROW, M. D.

Toronto, Can.

SOCIETE ROYALE DE MEDECINE DE GAND

The Societe Royale de Medecine de Gand has taken over, on its own account, the publication of its Annals. As far as possible, each number will treat determined medical problem. An appeal will be made upon the most qualified Belgian and foreign personalities.

The first number contains 120 pages and is especially devoted to scarlet fever.

The second number will be devoted to female sexual hormones and shall contain articles by Professor Courier (Algers), Dr. Kaufmann (Berlin), and Dr. Laemmer (Paris). It will equally contain an article by Dr. Atkinson (London) relating to acromegaly and Prof. Charvat (Prague), treating surrenals.

The third number which will be devoted to the treatment of chronic rheumatism, shall contain articles by Professor Gunsburg (Brussels), Pemberton (New York), Papp (Budapest), Koncholvsky (Moscow), and Doctors Barnes Burt (Bath), Krebs (Wiesbaden),

M. P. Weill (Paris), Sédilot (Paris), Roland Leven (Paris), etc.

In the next issues studies will be edited concerning vitamins, brain tumors, cardiacal diseases, etc.

The Annals would like contributions from American physicians on the following subjects:

1. Cardiology (especially pectoral angina).
2. Vitamins.
3. Brain tumors.

The subscription for at least 10 issues amounts to 50 Belgian francs per annum. Subscriptions are to be effected in favor of the Société Royale de Médecine, Ghent; Belgian Post-checke n° 619.86.

Any information to be obtained from the Society's Secretary, Dr. P. De Bersaques, Rue de la Croix, 8, Ghent.

Anyone desiring to receive the issue devoted to scarlet fever, can obtain this number from the Secretary, Dr. P. De Bersaques, Rue de la Croix, 8, Ghent. Price: 10 francs.

HEALTH NEWS ITEM

What a world! By the time you are important enough to take two hours for lunch, the doctor limits you to a glass of milk.

Society Proceedings

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Wednesday, November 4, 1936

PROGRAM

Symposium on Oxygen Therapy

1. Physiology of Oxygen Want with Discussion of Symptoms. Ford K. Hick, Chicago. Dept. of Medicine, University of Illinois and Illinois Research Hospital.
2. Accepted Methods of Administration to Assure Therapeutic Dosage. J. I. Banash, Chicago, Consulting Engineer.
3. Clinical Response to Oxygen Therapy. M. Herbert Barker, Chicago. Dept. of Medicine, Northwestern University and Passavant Hospital.
4. Postoperative Use of Oxygen. Ralph M. Waters, Madison. Professor of Anaesthesia, Dept. of Medicine, University of Wisconsin.
5. Discussions opened by—Robert W. Keeton, Dept. of Medicine, University of Illinois.

JO DAVIESS COUNTY

The Jo Daviess County Medical Society met at the Galena Golf Club at Galena on September 24. During the afternoon several of the members held a friendly golf tournament. The scientific meeting was addressed in the evening by Dr. W. J. Bleckwenn of University of Wisconsin Medical School, on Early Diagnosis and Treatment of Head Injuries. Dr. M. J. Musser of Wis-

consin General Hospital gave a paper on the Early Diagnosis and Treatment of Bromism.

Physicians were present from Dubuque, Iowa, Southern Wisconsin and adjoining counties.

RAY E. LOGAN, M.D., *Secretary*.

Marriages

FRANCIS KEITH BRADFORD, Chicago, to Miss Margaret Anne Bowles, of Richmond, Va., recently.

JOHN BERNARD CHRISTIE, Champaign, Ill., to Miss Marie Anna Sturdyvin, in Peoria, in July.

SHERMAN S. GARRETT, Champaign, Ill., to Miss Virginia Hailey of Kansas City, Mo., in Carlinville, in June.

LOREN LENNETH LOVE, Valier, Ill., to Miss Thedis Wentz of Johnston City, recently.

JAMES BLISH McBEAN to Miss Grace Agnes Callan, both of Chicago, August 19.

SOLOMON B. MEYERSON, St. Charles, Ill., to Miss Ida Edith Fisher of Long Branch, N. J., in Chicago, August 2.

KENNETH EUGENE POWELL to Miss Doris Elizabeth Appell, both of Galva, Ill., October 3.

HENRY C. ROSENSTIEL, Freeport, Ill., to Miss Mildred Mershon of Mount Carroll, August 15.

PHILIP FREDERIC SCHNEIDER to Miss Kathryn Ann Lantz, both of Evanston, Ill., June 17.

ROGER F. SONDAG, East St. Louis, Ill., to Miss Mary Jo Gualdoni of Murphysboro, June 20.

FREDERICK STENN to Miss Harriett Stricker, both of Chicago, August 16.

LAWRENCE N. WALTHIER, Atkinson, Ill., to Miss Madeline Goering of Walcott, Iowa, in Davenport, June 6.

MARTIN F. ZIEMER, Chicago, to Miss Louise Anne Simon of Elkhart, Ind., September 20.

Personals

The Chicago Council of Medical Women was addressed October 2 by Dr. Esther T. Frankel on "Indications for Physiotherapy."

Dr. William H. Holmes, Chicago, discussed undulant fever before the Sangamon County Medical Society, October 1.

Dr. Samuel W. Becker discussed "Relation of Allergy to Dermatology" before the Chicago Society of Allergy, October 19.

Dr. Margarete M. H. Kunde, Chicago, discussed endocrine therapy before the Iroquois County Medical Society at Watseka, September 24.

Dr. Earl O. Latimer, Chicago, addressed the Will-Grundy County Medical Society, September 30, on treatment of appendicitis.

At a meeting of the Du Page County Medical Society, September 16, Dr. Clarence J. McMullen, Chicago, spoke on diabetes mellitus.

At a meeting of the DuPage County Medical Society, September 23, Dr. Max Thorek, Chicago, discussed "Photography as a Doctor's Hobby."

At a meeting of the Dewitt County Medical Society in Clinton, September 23, Dr. Robert S. Berghoff, Chicago, spoke on heart disease.

The presidential address was delivered before the Chicago Pathological Society, October 12, by Dr. Carl W. Apfelbach on "Modern Concepts of Cirrhosis of the Liver."

Dr. Louis K. Guggenheim, St. Louis, addressed the Chicago Laryngological and Otological Society October 12 on "The Ontogenetic Approach to the Pathology of Deafness."

Dr. Bryan J. Carder, deputy health commissioner of Berwyn township for the past three years, has been appointed commissioner to fill the unexpired term of the late Dr. Edward J. Farrell.

At a meeting of the Chicago Pediatric Society, October 20, Robert H. Gault, Ph.D., Evanston, read a paper entitled "Enlarging the Usefulness of the Vibrotactile Senses."

Dr. Max L. Folk, among others, presented a preliminary report on "Paracentesis and Atropine in the Treatment of Optic and Retinal Atrophies" before the Chicago Ophthalmological Society, October 19.

Dr. Mary Stone, head of the Bethel mission center, Shanghai, China, was guest of honor at a dinner given by women physicians of Chicago at the Women and Children's Hospital.

The Chicago Roentgen Society was addressed, among others, by Dr. Stuart W. Harrington, Rochester, Minn., on "The Diagnosis and Treatment of Diaphragmatic Hernia."

The Chicago Neurological Society was addressed October 15, among others, by Drs. Isidore Finkelman and Daniel Haffron on "Observations

on the Circulating Blood Volume in Schizophrenia, Manic Depressive Psychosis and Epilepsy."

Dr. Frank E. Walton, St. Louis, addressed the Vermilion County Medical Society in Danville, September 2, on "Diagnosis and Management of Biliary Tract Diseases."

Samuel J. Beck, Ph.D., recently of the department of psychiatry, Harvard Medical School and Boston Psychopathic Hospital, Boston, has been appointed in charge of the psychology laboratory in the department of psychiatry at Michael Reese Hospital.

Dr. Dean DeWitt Lewis, professor of surgery Johns Hopkins University School of Medicine, Baltimore, delivered the eighth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society, October 2. His subject was "Endocrinology and Surgery."

The Hancock County Medical Society was addressed, September 14, by Drs. Charles P. Blair, Monmouth, on "Fractures of the Spine" and Harold M. Camp, Monmouth, "The County Medical Society and the Community."

Speakers before the La Salle County Medical Society in Ottawa, September 23, were Drs. Jacob J. Singer, St. Louis, on "Diagnostic Methods in Obscure Chest Conditions," and Millard F. Arbuckle, St. Louis, "Pulmonary Conditions Revealed by the Bronchoscope."

The McDonough County Medical Society was addressed at Macomb, September 24, by Drs. William J. Pickett, Chicago, on thyroid surgery; Joseph E. F. Laibe, Chicago, hematuria, and Robert S. Berghoff, Chicago, diseases of the heart. Dr. Berghoff also conducted a heart clinic.

Dr. George E. Bennett, Baltimore, addressed the Chicago Orthopaedic Society, October 9 on "Acute, Recurrent and Old Dislocations of the Shoulder," and Drs. Paul H. Harmon and Carroll O. Adams, "Pyogenic Arthritis of the Hip, with Special Reference to Pathological Dislocation and Treatment."

Sir Joseph Barcroft, professor of physiology, University of Cambridge, England, gave two lectures at the University of Illinois College of Medicine, September 29-30; his subjects were "The Genesis of Respiratory Movements" and "The Effect of the Composition of the Blood on Mental Properties."

Dr. Frederick A. Causey, assistant managing officer of the Chicago State Hospital, has been appointed acting managing officer of the Lincoln State School and Colony, Lincoln; Dr. Phillip S. Waters, Alton, managing officer of the Lincoln school, has been granted a leave of absence on account of illness.

At a meeting of the Englewood branch of the Chicago Medical Society, October 6, Dr. Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, will speak on medical economics and Dr. Olin West, Secretary of the Association, will open the discussion. Dr. Emil Novak, Baltimore, addressed the Aux Plaines branch, September 25, on "Cause and Treatment of Functional Uterine Bleeding."

Dr. M. Herbert Barker, Chicago, addressed the Jackson County Medical Society, Kansas City, Mo., October 13, on "Clinical Response to Oxygen Therapy."

Dr. Archibald Hoyne addressed the Lee County Medical Society on October 5. Subject: "Infantile Paralysis."

Dr. Daniel H. Levinthal addressed the American Association for the Study of Neoplastic Diseases at their meeting in Washington, D. C., on September 17, 1936. His subject was "Eradication of Benign Bone Tumors and Immediate Reconstructive Surgery."

Dr. Elmer V. McCarthy addressed the 13th annual convention of the American College of Proctology at the Stevens Hotel, September 24, on "The Injection Treatment of Hernia," illustrating the subject with moving pictures covering the anatomical, clinical, surgical and injection aspects.

Dr. Gilbert Fitz-Patrick, Chairman Illinois Cancer Committee spoke under the auspices of the Shannon Woman's Club at the Evangelical Church, Shannon, Illinois, Wednesday, October 7. Subject: "What Every Woman Should Know About Cancer," illustrated with slides.

Dr. Philip H. Kreuscher presented a paper on "Surgical Treatment of Arthritis," at a meeting of the Eighth Councilor District of the Illinois State Medical Society in Casey, October 8. John R. Neal of Springfield discussed "The Regulation of the Physician by Law."

Dr. Abraham R. Hollender gave a paper on "Vaso-Motor Rhinitis—Evaluation of Therapeu-

tic Procedures with Special Reference to Ionization," before the Will-Grundy County Medical Society at Joliet, October 7.

Dr. Clayton J. Lundy addressed the Kankakee County Medical Society, Thursday October 8, on Angina Pectoris and also demonstrated electrocardiograph studies of the heart with movies.

News Notes

The Illinois Radiological Society and the Chicago Roentgen Ray Society held a joint meeting at Starved Rock State Park, Illinois on Sunday, October 11.

In addition to the discussion of several interesting cases the following program was presented:

The Diagnosis of Chronic Cholecystitis, Dr. W. H. Cole, Prof. of Surgery, University of Illinois.

The Illinois Occupational Disease Law, Oliver E. Mount, Chairman of Committee on Occupational Disease, Illinois Manufacturer's Ass'n.

—Dr. Frank W. Lynch, professor and head of the department of obstetrics and gynecology, University of California School of Medicine, San Francisco, delivered the seventh annual Charles Sumner Bacon Lectures at the University of Illinois College of Medicine, October 16 and October 23. Dr. Lynch's subjects will be "Carcinoma of the Uterus" and "Uterine Fibroids."

—A record of 206 cases of infantile paralysis in Illinois in September was the highest monthly total of cases of this disease since 1917, according to the Chicago *Tribune*, September 28. Because of the general increase in prevalence throughout the state, the Illinois department of health has requested volunteer contributions of blood from persons who have recovered from the disease in the last fifteen years.

—Securities valued at more than \$1,000,000 were given to Wesley Memorial Hospital, October 14, by George Herbert Jones, formerly president of the Inland Steel Company. The money will be used to erect the first unit of a proposed new \$5,000,000 group of hospital buildings at Chicago Avenue, Fairbanks Court and Superior Street, near Northwestern University's McKinlock Campus.

Dr. Henry A. Christian, Hersey professor of the theory and practice of physic, Harvard University Medical School, Boston, delivered the third Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the Institute of Medicine of Chicago at a joint meeting with the Chicago Society of Internal Medicine, October 26, at the Palmer House. His subject was "Edema, Diuretics, Diuresis."

—Wesley Memorial Hospital announces the receipt of an annual allotment from the Davella Mills Foundation, Montclair, N. J., for the treatment of cancer patients and research on cancer. The sum of \$7,500 was allotted for 1936 and in June of each year an appropriation will be made. The Davella Mills Foundation was created in 1934 by Mr. David B. Mills and his wife Ella. The income is used to further the activities of several philanthropies.

—Dr. Richard Jaffe will hold the Children's Pathology conferences of Cook County Hospital in the Morgue Amphitheatre at 1:00 P. M., on the following dates:

October 16, 1936.
November 20, 1936.
December 18, 1936.
January 15, 1937.
February 19, 1937.
March 19, 1937.
April 16, 1937.
May 21, 1937.

At these conferences, the most interesting post-mortem material from the Cook County Children's Hospital is presented. Clinical histories and laboratory findings are given by the resident familiar with the case. The Attending Staff of Cook County Hospital discuss the findings.

All members of the Illinois State Medical Society are invited.

MAURICE L. BLATT, M.D.,
Head of the Department,
Diseases of Children,
Cook County Hospital.

—Frederick Stearns & Company announce the appointment of Lloyd L. Ely, M. D., as medical director. Dr. Ely has been a member of the Chicago and Indianapolis Medical Societies, the Illinois and Indiana State Medical Associations, the American Medical Association and the Society for the Study of Internal Secretions.

Deaths

EDWARD MILTON BROWN, Chicago; a Fellow A. M. A.; Northwestern University Medical School, Chicago, 1893; clinical professor of surgery, Loyola University School of Medicine; fellow of the American College of Surgeons; senior surgeon to the Mercy Hospital; aged 67; died, September 28, of coronary embolism and chronic myocarditis.

WILLIAM HENRY BURMEISTER, Chicago; University of Michigan Department of Medicine, Ann Arbor, 1907; a Fellow A. M. A.; served during the World War; formerly assistant professor of pathology at the University of Illinois College of Medicine; on the staff of St. Joseph's Hospital; aged 54; died, August 11, at his summer home in McHenry.

FRANCIS JAMES BUSS, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; a Fellow A. M. A.; member of the staffs of the Robert Burns, Belmont and Ravenswood Hospitals; aged 60; died, July 11, of embolism.

THOMAS D. CANTRELL, Bloomington, Ill.; Rush Medical College, Chicago, 1888; member of the Illinois State Medical Society; served during the World War; aged 72; died, August 18, of arteriosclerosis and cerebral hemorrhage.

HAROLD EARL DODGE, Franklin Park, Ill.; Rush Medical College, Chicago, 1890; for many years health officer of Franklin Park; aged 73; died, July 13, of carcinoma of the prostate.

ALFRED OLIN ELLISON, Chicago; Hering Medical College Chicago, 1911; member of the Illinois State Medical Society; served during the World War; on the staff of the Norwegian American Hospital; aged 49; died, July 29, of an overdose of morphine, self administered.

CHARLES A. EVANS, Bluffs, Ill.; Medical College of Indiana, Indianapolis, 1896; past president of the Scott County Medical Society; past president of the village board, and member of the local board of education; aged 67; died, July 5, of myocarditis and diabetes mellitus.

FRANK JOHN FARA, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; a Fellow A. M. A.; member of the staff of the Hospital of St. Anthony de Padua; aged 55; died suddenly, July 22, in Berwyn, Ill., of coronary thrombosis.

LOUIS J. GIERS, Jerseyville, Ill.; St. Louis College of Physicians and Surgeons, 1891; member of the Illinois State Medical Society; aged 69; died, July 11, of arteriosclerosis.

PHILIP ABERNETHY GRAVES, Oak Park, Ill.; Dearborn Medical College, Chicago, 1904; a Fellow A. M. A.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; for many years a member of the staff of the Chicago

Eye, Ear, Nose and Throat Hospital; aged 63; died, July 17.

JOEL HENRY GREENE, Urbana, Ill.; University of Buffalo School of Medicine, 1875; aged 84; died, July 29, in the Burnham City Hospital, Champaign, of angina pectoris.

WILLIAM LISENBY GRAY Champaign, Ill.; Keokuk (Iowa) Medical College, 1891; a Fellow, A. M. A.; fellow of the American College of Surgeons; past president of the Champaign County Medical Society; for many years member and president of the board of education; formerly city health officer; aged 70; on the staff of the Burnham City Hospital, where he died, August 29, of a skull fracture received in a fall.

HENRY FORD HASKINS, Peoria, Ill.; St. Louis University School of Medicine, 1916; member of the Associated Anesthetists of the United States and Canada; served during the World War; aged 43; died, July 25, of pneumonia.

JOSEPH C. HUDSPETH, Sandoval, Ill.; American Medical College, St. Louis, 1882; aged 81; died, July 13, of heat exhaustion.

CARL ALBIN LOFGREN, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 67; died, July 12, of diabetes mellitus.

GEORGE NELSON MANNING, Wheaton, Ill.; College of Physicians and Surgeons of Chicago, 1894; aged 66; died, July 13, in St. Charles Hospital, Aurora, of cerebral hemorrhage.

JOSEPH D. MCKELVEY, East Moline, Ill.; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 65; on the staff of the East Moline State Hospital, where he died, July 29, of heart disease.

HENRY PARKER NEWMAN, professor of gynecology, emeritus at the University of Illinois College of Medicine, Chicago; died, September 21, of coronary occlusion, at his home in San Diego, Calif., aged 82. Dr. Newman was born in Washington, N.H., Dec. 2, 1853. He obtained his preliminary education at the New London (N. H.) Literary and Scientific Institution and later attended Dartmouth College. In 1878 he received the medical degree from the Detroit Medical College, and later, for two years, studied at universities in Bonn, Leipzig and Strassburg. In 1880 Dr. Newman located in Chicago. He became professor of obstetrics and clinical gynecology at the College of Physicians and Surgeons of Chicago, of which institution he was also treasurer and member of the board of directors. At one time he was professor and emeritus professor of gynecology at the Chicago Policlinic and one of the founders, president and professor of gynecology, Post-Graduate Medical School and Hospital of Chicago and was president of the laboratory of experimental research while it was part of that institution. From 1894 to 1904 he was treasurer, chairman of the Section on Obstetrics and Diseases of Women from 1900 to 1901, and a member of the House of Dele-

gates from 1916 to 1918 of the American Medical Association. He was an Affiliate Fellow of the American Medical Association, at one time vice-president of the Chicago Gynecological Society, and one of the founders and a fellow of the American College of Surgeons. He was a member of the Gorgas Memorial Institute of Preventive Medicine, Washington, D. C., a founder of the Congrès Périodique International de Gynaecologie et d'Obstétrique, and in 1890 a delegate to the Tenth International Medical Congress in Berlin. He was consulting surgeon and gynecologist to the San Diego County and Mercy hospitals, San Diego, and the Scripps Memorial Hospital and Clinic, La Jolla. He established, and was president and surgeon-in-chief of the Marion Sims Sanitarium; was formerly on the staffs of the Chicago Post Graduate, St. Anthony's, Chicago Maternity, West Side and St. Elizabeth's hospitals, Chicago. In 1894 he was awarded the honorary A.M. degree by Dartmouth College.

DOUGLAS LATEN POTTER, Chicago; Rush Medical College, Chicago, 1935; aged 27; on the staff of the U. S. Marine Hospital, where he died, August 25, of intestinal obstruction due to adhesions and acute peritonitis.

JOHN EARL PULVER, Chicago; John A. Creighton Medical College, Omaha, 1908; member of the Illinois State Medical Society; chief surgeon for the Chicago and North Western Railroad; aged 52; died, August 28, in Omaha, of arteriosclerotic heart disease.

RUSSELL DEAN ROBINSON, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1914; Fellow, A. M. A.; served during the World War; on the staffs of the Roseland Community Hospital and the Little Company of Mary Hospital; physician to the Morgan Park Military Academy; aged 46; died, August 5, of injuries received when he fell from the roof of his home while repairing a radio aerial.

WILLIAM PHILLIP SCHIRDLING, Palatine, Ill.; Rush Medical College, Chicago, 1894; aged 64; died suddenly, July 16.

OCTAVIUS MANLIUS SPENCER, Chicago; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; formerly a surgeon in the U. S. Public Health Service; aged 43; died, July 13, of heart disease.

LEROY THOMAS TELFORD, Alma, Ill.; University of Illinois College of Medicine, Chicago, 1936; aged 26; died, July 12, in the Evangelical Deaconess Hospital, St. Louis, of an injury received by diving into shallow water.

JOSEPH S. THRAILKILL, Wood River, Ill.; American Medical College, St. Louis, 1883; aged 75; died, June 30, of arteriosclerosis.

CHARLES ARTHUR ZEIGLER, Amboy, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Illinois State Medical Society; president of the Lee County Tuberculosis Society; for many years a member of the board of education; aged 68; died, July 6, of occlusion of the coronary artery.

Hundreds of TONS of DUST

fall yearly on each square mile
of large cities

A shockingly large amount of dust—literally hundreds of tons—is deposited annually over each square mile of the larger urban centers. The following figures, from independent studies made over a period of years, are not isolated examples but typical of the atmospheric pollution in large cities.¹

	Tons of dust per sq. mi. annually
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Pittsburgh	1031
Salt Lake City	349
Cleveland	780
Washington	291

In many smaller communities even worse conditions may prevail under any of the following combinations: (1) soft coal, (2) low inland wind velocity, (3) concentrated manufacturing activity, (4) no zoning regulations, (5) no smoke abatement ordinances.

It is noteworthy that even a nonindustrial city such as Washington has so high an atmospheric pollution, due mainly to smoke from residences and office buildings.

This vast amount of soot and dust cuts off light. Shrader, Coblenz, and Korff, for instance, found that the amount of ultraviolet light in Baltimore was half that 10 miles from the center of the city.¹ Under such circumstances, to rely on winter sunbaths for the treatment of rickets may prove ineffective.

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*U.S.P. Minimum Standard. ¹U.S. Public Health Bulletin No. 224.

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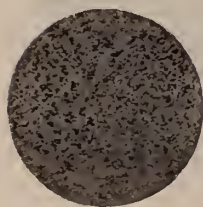


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Book Reviews

AN INTRODUCTION TO MATERIA MEDICA AND PHARMACOLOGY. By Hugh Alister McGhigan, M. D., and Edith P. Brodie, R. N. With 71 text illustrations and 18 colored plates. St. Louis. The C. V. Mosby Company. 1936. Price \$2.75.

This book is the outgrowth of an attempt to revise the fourth edition of Brodie's Materia Medica for Nurses. Much of the material in the fourth edition of Brodie has been retained, but much new material has been added.

For the convenience of the student, the book is divided into two sections: Part One—Elementary Materia Medica; Part Two—Advanced Materia Medica and Therapeutic Application.

RESEARCH IN DEMENTIA PRECOX. By Nolan D. C. Lewis, M. D. 1936. 50 West 50th Street. New York City. The National Committee on Mental Hygiene. Price \$1.50.

This book presents a comprehensive picture of what is being done in the whole field of dementia precox research from every scientific angle. It is in a sense the foundation upon which the further development and future planning of investigation in this field will be largely based.

(Continued on page 24)

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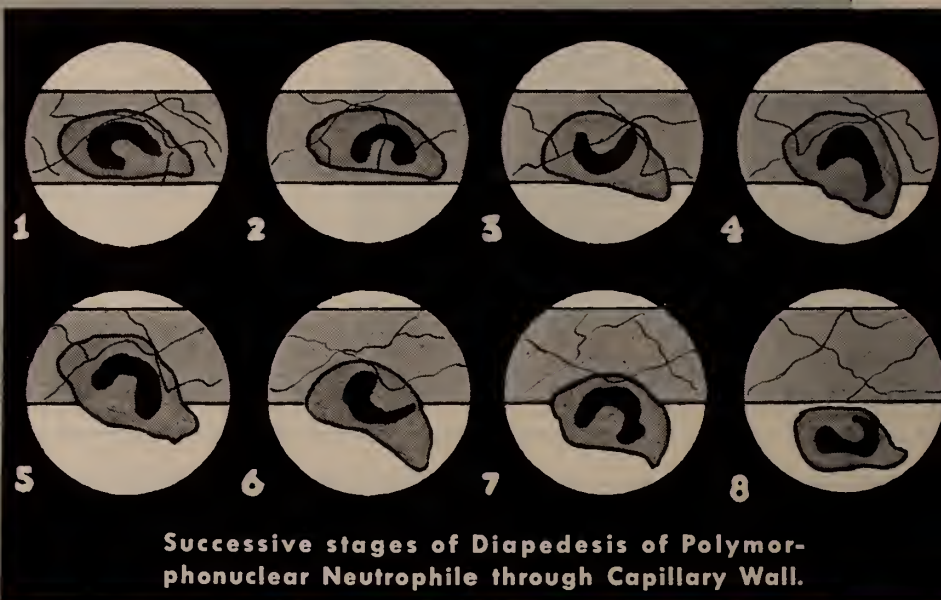
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TIME OF OVULATION IN WOMEN. A Study on the Fertile Period in the Menstrual Cycle. By Carl G. Hartman, Department of Embryology, Carnegie Institution of Washington, Johns Hopkins Medical School, Baltimore. Baltimore, The Williams and Wilkins Co. 1936.

This book is issued as one of a series of books on the medical aspects of human fertility issued by the National Committee on Maternal Health. The author is the foremost authority on the physiology of reproduction in monkeys and he is an experimental biologist with an active interest in the clinical problems of human reproduction. He takes up the anatomy and physiology of the male and female germ cells, fertilization, the travels of the fertilized egg, male and female sex cycles, the menstrual cycle and particularly the time of ovulation and methods of determining its occurrence. As Hartman points out, the reproductive careers of monkeys and women have many points in common. In female monkeys there is an absolute safe period. The fertile days range between days 8 and 21 of the menstrual cycle. In women the best evidence points to a mid-interval ovulation as the rule. As proofs accumulate they show a trend toward a complete denial of ovulation in the last quarter of the cycle, i. e. toward the

(Continued on page 28)



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(Continued from page 24)

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(Continued from page 28)

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In this sixth edition the work has been thoroughly revised and brought up to date. An up to date revision

was imperative because of the extraordinary advances reflected in the literature in the past few years, especially in the field of endocrine disturbances, vitamin deficiencies and virus infections.

While many topics are included which were omitted in previous editions the general plan of this book remains the same. Naturally, in many diseases the cause is still unknown and these are dealt with in chapters arranged as logically as possible.

References to the literature given with each chapter have been chosen as far as possible to direct the student to readable and comprehensive papers which review the subject and give further and more complete references.

ARTHRITIS AND RHEUMATIC DISEASES. By Maurice F. Lautman, M. D. New York. London. Whittlesey House. McGraw-Hill Book Company, Inc. 1936. Price \$2.00.

The cause and treatment of arthritis have been the subject of intensive research during the past few years. Recent advances in its care are made available in this volume, which is written in non-technical language for the general reader.

ORAL DIAGNOSIS AND TREATMENT PLANNING: By Kurt H. Thoma, D. M. D., Charles A. Brackett, Professor of Oral Pathology in Harvard University; Oral Surgeon to the Brooks Hospital; Consulting Oral Surgeon to the New England Baptist Hospital; Consulting Oral Surgeon to the Tumor Clinic of Beth Israel Hospital. 379 pages with 533 illustrations, 71 of them in colors. Philadelphia and London: W. B. Saunders Company. 1936. Cloth, \$6.00 net.

This book covers diseases and abnormal conditions of the teeth, jaws, and other organs and tissues of the mouth. In addition to primary lesions, and secondary manifestations that are not diseases but are symptoms only of some general disturbances are thoroughly considered.

THE INTELLECTUAL FUNCTIONS OF THE FRONTAL LOBES.

By Richard M. Brickner, M. D. New York. The Macmillan Company. 1936. Price \$3.50.

The ingenuity which Dr. Brickner has introduced into the method of his clinical study, together with the careful and painstaking efforts which are manifest throughout this valuable contribution provide the record of a unique case which cannot fail to be of lasting service to neurologists, psychiatrists and psychologists.

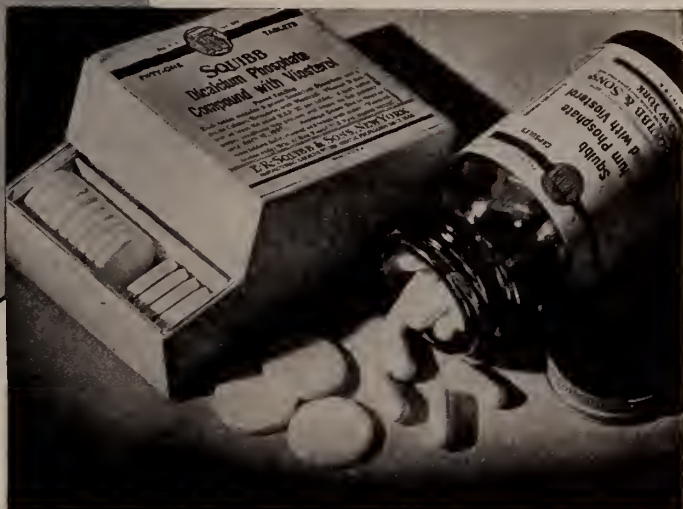
PHYSICIAN, PASTOR AND PATIENT. By George W. Jacoby, M. D. Illustrated. Paul B. Hoeber, Inc. New York-London. 1936. Price \$3.50.

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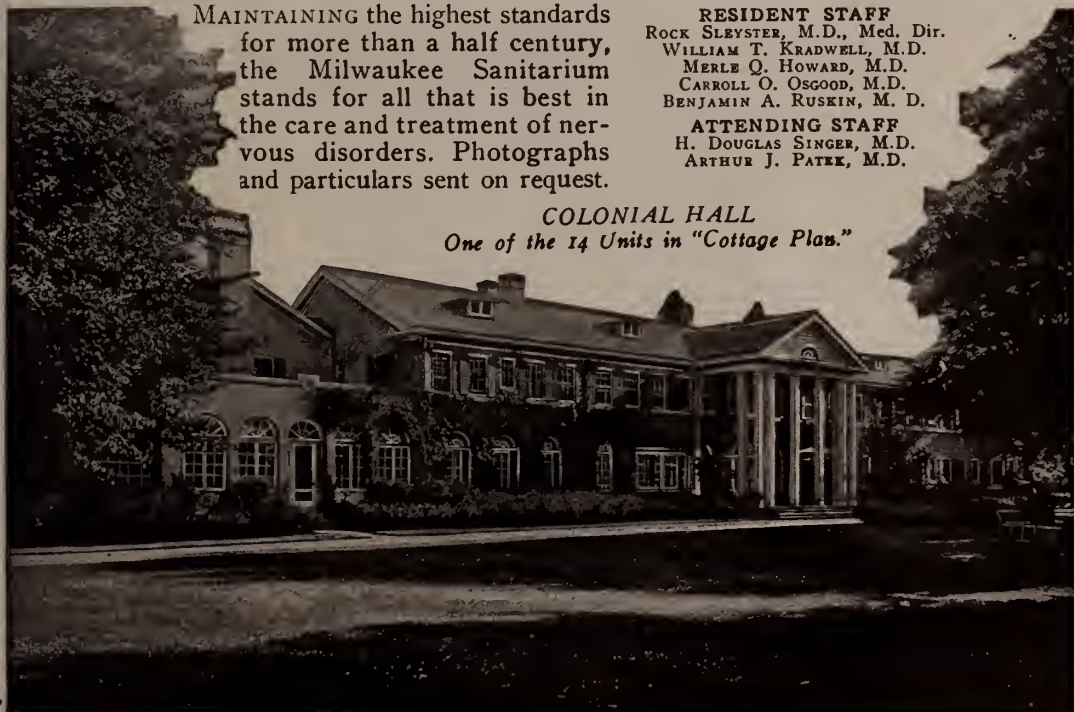
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(1) 1935. Nutrition Abstracts and Reviews 4, 709.
(2) The Pharmacopoeia of the United States of America, Eleventh Decennial Revision, p. 261.

(3) 1936. Report of the Council, J. Amer. Med. Assoc. 106, 1733.
(4) 1935. J. Assoc. Official Agr. Chem. 18, 610.

(5) 1935. J. Home Econ. 27, 658.
(6) 1936. Food Research 1, 223.
(7) 1935. J. Nutrition 9, 667.

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Mumps	3rd Week	Duration of Swelling
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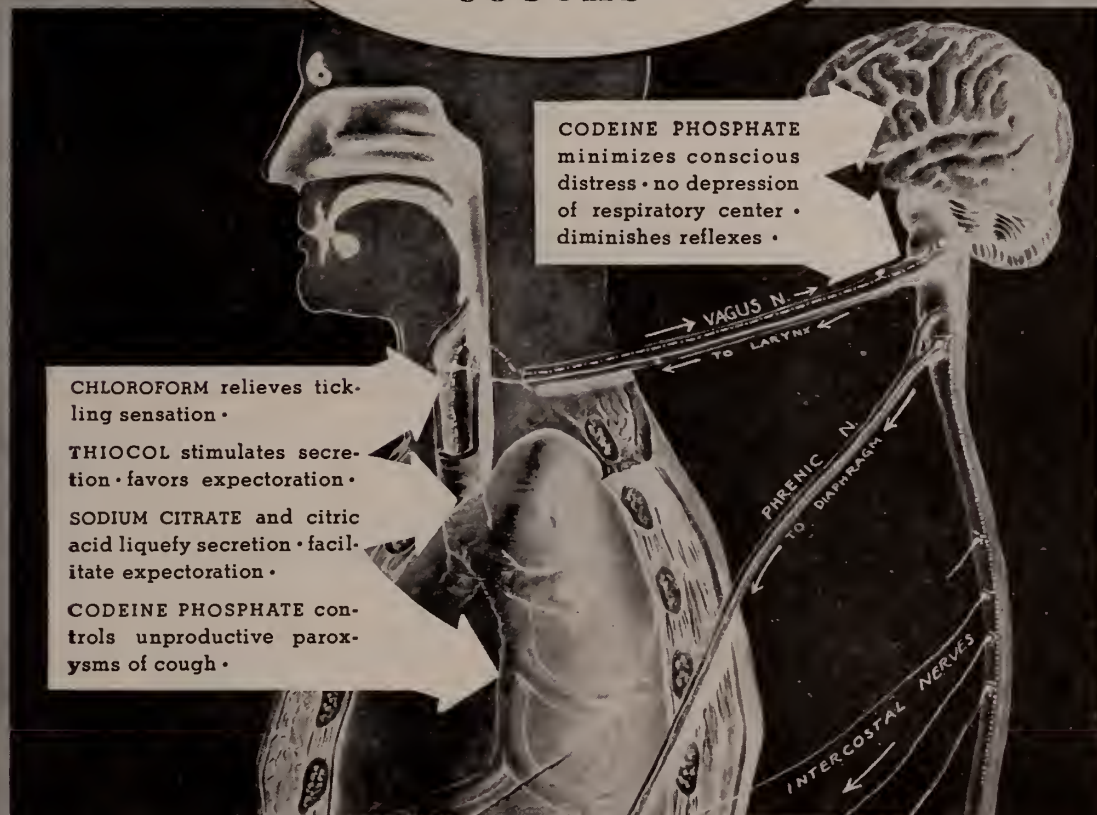
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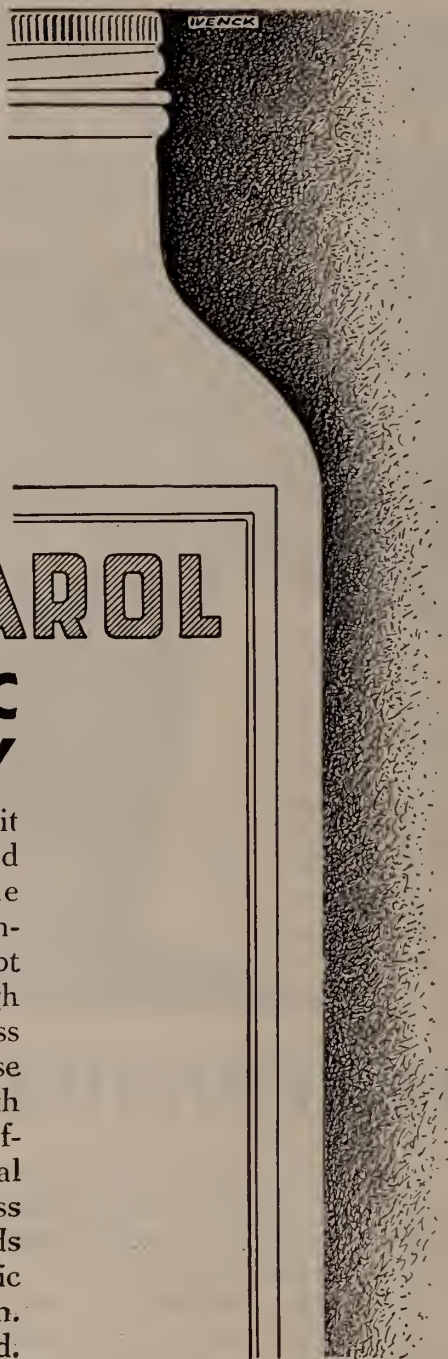
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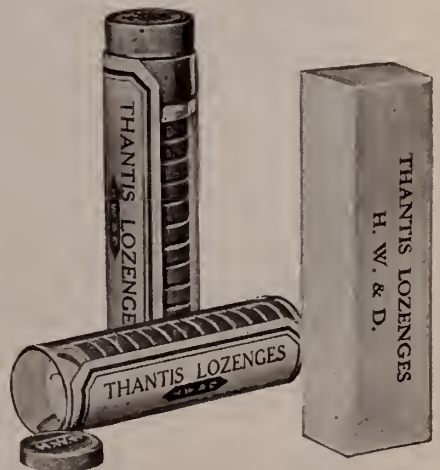
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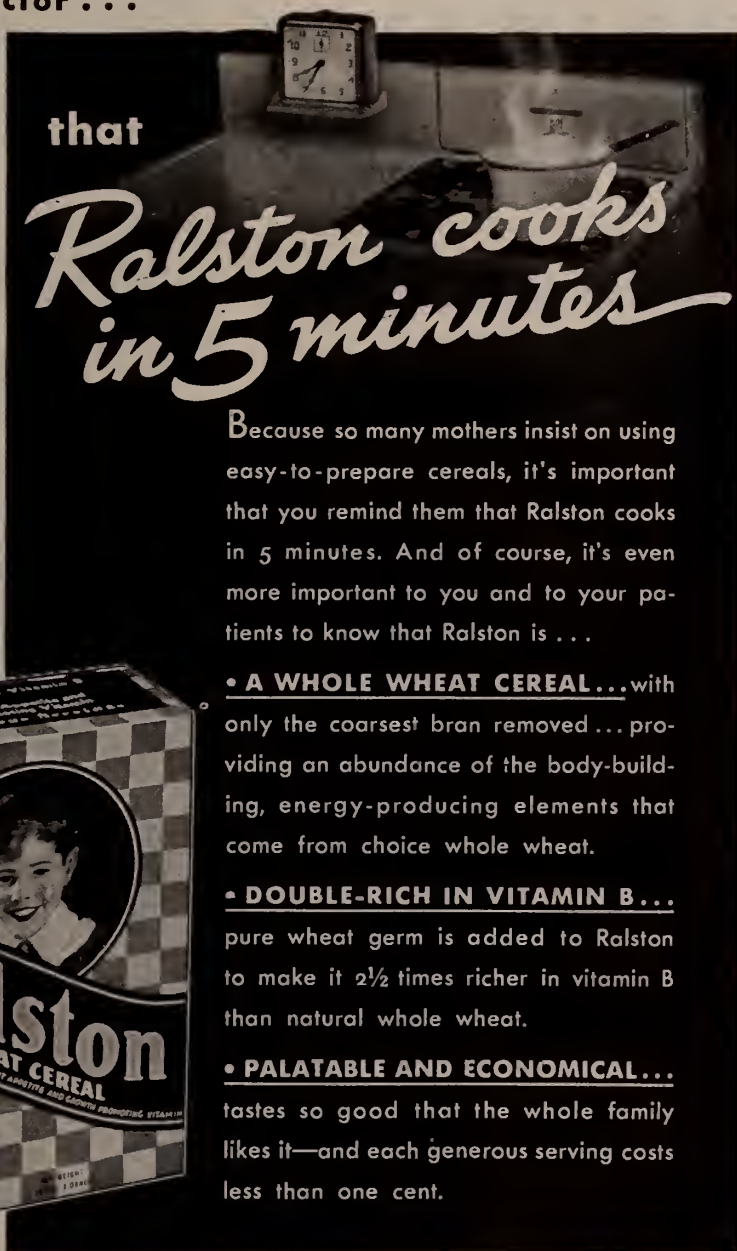

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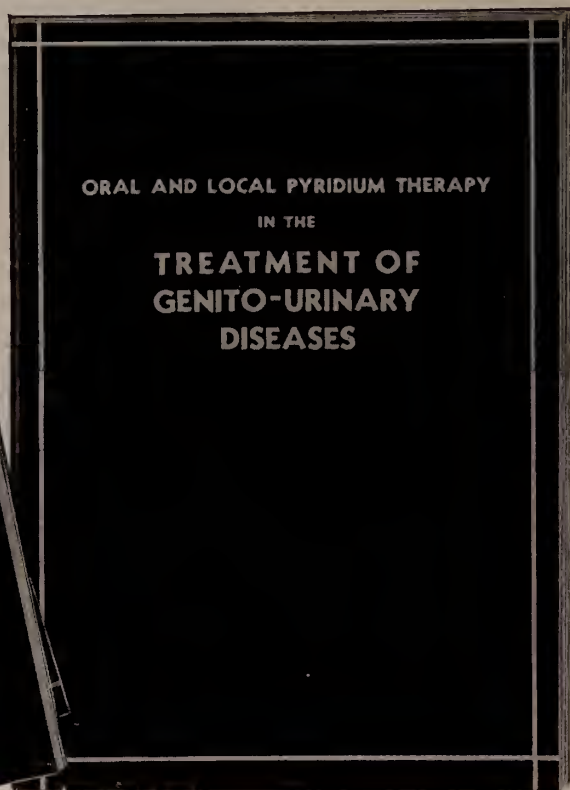
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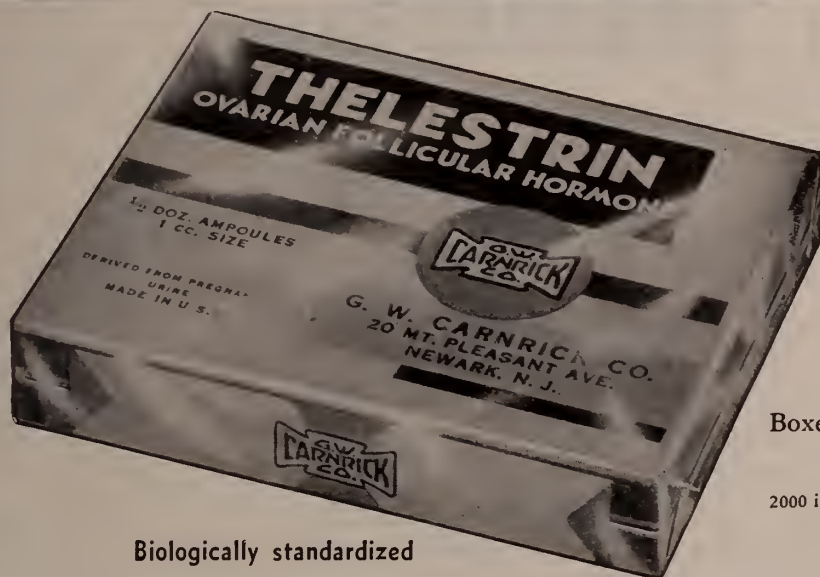


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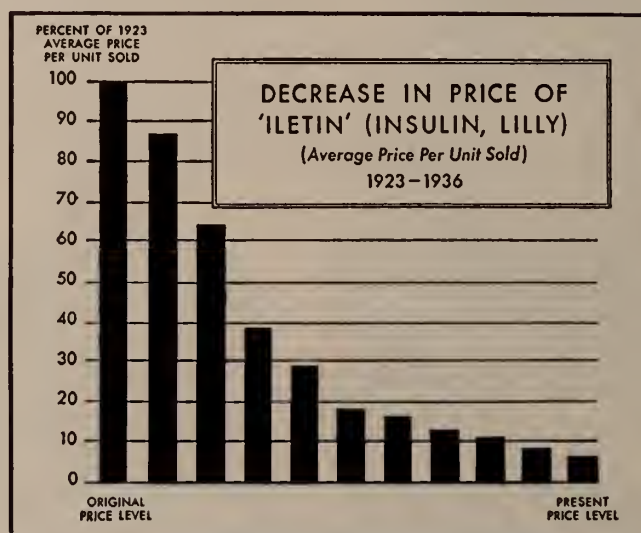
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No. 6

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Editorials

EFFECT OF OLD AGE PENSION TAXES UPON PHYSICIANS AS DEVELOPED THROUGH THE SOCIAL SECURITY ACT

Physicians are facing a new and additional tax both upon revenue and patience as a partial means of financing the old age benefit provisions of the new Social Security Act.

Immediate interest of doctors is focussed upon regulations published by the Bureau of Internal Revenue and which directly affect any doctor employing a stenographer, a switchboard operator, a reception clerk, laboratory technicians and employees, office nurse or assistant, and possibly a chauffeur. This last item would depend upon whether a "chauffeur" could come under the excepted classification of "domestic service in a private home."

For the stipulated employments outside the old age benefit provisions of the Social Security Act are listed (in the line of closest tangency to physicians' interests) as "agricultural labor; domestic service in a private home; casual labor not in the course of the employer's trade or business; service performed by an individual who has attained the age of 65; service performed in the employ of the United States or of any state or subdivision or instrumentality of either; and service performed in the employ of a corporation, community chest, fund or foundation organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual. Physicians employing only persons embraced within these excepted employments or who are themselves engaged in such excepted services are not required to make application for identification or account numbers."

All others, however, who on November 16 was the employer of one or more persons, subject to the exemptions noted, prior to November 21, must report that fact to the postmaster from

whose post office the physician has obtained his office or business mail. He must also make application what is known as "Form SS-4," for the assignment of a number which is an "identification number" which is used for identification in the process of collecting the taxes under the Social Security Act for the benefit of the old age benefit provisions. If physicians who were employers on that date failed to comply with this requirement **THEY MUST COMMUNICATE IMMEDIATELY WITH THEIR POSTMASTERS.**

Any physician becoming an employer subsequent to November 16, must also apply for an identification number within thirty days after the relationship of employer and employee is established. Such application must be made to the field office of the Social Security Board in the area in which the office or business establishment of the physician is located, or if there is no such office to the Social Security Board, at Washington, D. C.

Persons who were employees of such physicians on November 24, are required to obtain what is called "account numbers" by filing application on Form SS-5 on or before December 5 with the local postmaster, and likewise persons becoming employees after November 24 must also file application for numbers within 30 days after the beginning of their employment.

While physicians generally are considered, under the regulations, as independent contractors and consequently not subject to the taxes imposed on employees, if physicians are employed on a full time or part time salary basis they are apparently to be considered as employees. Such physicians must file application for "account numbers" on form SS-5. As employees they are subject to the tax on employees, and their employers must pay the employer's tax with respect to them.

Employers' and employees' taxes will be collected by means of monthly returns to be filed by employers, who not only must pay to the local collector of internal revenue the tax imposed on employers but also must deduct from the wages of their employees the employee's tax and transmit that also to the collector. The first returns will be due not later than March 1, 1937, covering wages paid for services rendered during the month of January.

CINEMA-TITIS IS ALARMING JUVENILE AILMENT AND SO DEMANDS SCIENTIFIC SOLUTION

Indiscriminate admission of young children to sensational cinemas takes entirely too heavy a toll of youth and inhibits sane maturity.

Increased emotional disturbance and permanent nervous disorganization from cinematic over-indulgence are indicated through tests made by the hypnograph and by the psychogalvanometer. Experiments with the hypnograph show that even under ideal conditions the sleep of the most normal child is made up of a series of *quiet* periods alternating with a series of *restless* periods. Only one child in a hundred was found to sleep for a full hour without moving, while the average "quiet" period was less than eleven minutes.

Fifteen per cent. of the sleeping time of children is spent in bodily movements. Sleep is quietest during the first part of the night. From July to December is the greatest growth period of children and it is also the period when juvenile sleep is disturbed most by restlessness. The onset of illness is reflected in one or two antecedent nights of restlessness.

Applying the same instrument to children who had attended night cinemas it was noted that this group displayed either greatly increased restlessness or what was plainly the fatigue phenomena of a too deep sleep. The boys showed an average increase in restlessness of 26 per cent. and the girls of 14 per cent. Screaming and other symptoms characteristic of hysteria also followed stirring cinemas.

The psychogalvanometer revealed that children became twice as excited as did adults and that the average picture was a powerful emotional experience for the average child. In one instance the pulse rate was quickened to 192 from the normal 80, and an acceleration to 120 and 140 was common. Many deep, highly injurious and lasting impressions are the consequence of a child's realistic attitude to those cinemas classified as "fright-and-horror-pictures," and to the juvenile inability to make the so-called "adult discount."

That this is a genuine menace not only to children but to their emotional future may be realized to some extent when it is considered

that a recent group report upon children and the cinema, in which the findings were well authenticated some of the statistics were that:

Twenty-eight million American children attend the movies every week.

Eleven million of these children are under eleven years of age.

The average motion picture is heavily freighted with sex, love and crime. (An analysis of 1,500 films.)

Little passes over the head of the average child—he remembers seventy per cent. as much of what he sees as does the adult.

The motion picture is capable of powerfully shaping the attitude of youth toward many questions—race prejudice, capital punishment, gambling, etc.

The conduct patterns of many children are moulded by the movie through imitation, a well-known characteristic of childhood. Wide sampling among youthful criminals and delinquent girls shows that many of their ideas and methods are traceable to motion picture influence.

The deterrent and correctional effect of the better type of picture is slight and short lived.

When the movie-going child is contrasted with the non-movie-going child, the latter is found to have a better school record both as to conduct and scholarship, to be emotionally more stable and more popular with other children.

The situation calls for corrective measures both educative and legislative. Movie theaters are large, comfortable, warm in winter, cool in summer and from the standpoint of the busy city mother a safer place for the child than the ball-game in the streets or the dubious delights of the "gang." The picture that educates the child, the film that enlightens as to historical, geographical, chemical, or any other scientific or literary fact is to be desired inasmuch as such films are aids to development as only visual education can be.

Gang pictures, sex pictures or even clean super-thrillers have no place in the juvenile mental program. Just what the solution may be is puzzling.

For those parents whose sole recreation is a movie at night and nothing to do with the child but drag it along, out of simple justice to the child, and perhaps as a desirable eventuality the alert and conscientious cinema showman will

devise an anodynistic program for the unfortunate out-of-bed youngster to run concurrent with parental pleasure over thrills as the celluloid shows them. At any rate children should be kept away from thrillers for the good of the race.

INCREASING PATERNALISM

Our grand old U.S. A. has been guilty of many paternalisms since 1914.

Among them, for remembrance's sake, let there be listed: A law was passed in 1915 with the idea of decreasing, or of eliminating "orphans of widowed or abandoned mothers." This law provided a payment of \$7.50 per month, or two and one-half cents per day for each such child. How did it work?

In 1915, orphans of that ilk totaled 1,500. In 1916 this same orphan crop had increased to 3,600, while in 1930 not only had the orphan crop increased to 36,000 but the amount per orphan had jumped to \$9.50, or something more than three cents per day. Statistics show that this was a much greater, in fact an appallingly greater per capita increase in orphans than in population of the entire commonwealth. To the mathematical eye this intimates rather a large gentleman in the woodpile—somewhere!

Add, too, "Workmen's Compensation Insurance." Contrary verdict of leading insurance companies tried and tested in the routine of the nation's industry and finance is unanimous.

Industrial accidents instead of diminishing to the disappearing point have increased in exactly inverse ratio, and already to the tune of several hundred per cent. In Chicago recently it has been deemed necessary to investigate colossal collection of industrial accident damages. Graft has been rampant in only too many states and too many accidents.

The master mistake at individual housecleaning by law was the monumentally misguided 19th Amendment. Prohibition paternalism has the wreckage of at least one generation hung on its belt, while the diversion of millions of legitimate revenue to industry is as incalculable loss as the number of homes broken up through fanatical punishments to prohibition law violators. "*Life for a Pint*" it will be recalled was a Michigan slogan; and persons, men and women, were sent to prison (and for all this editor knows may be

there yet) because in their possession was found a pint of alcoholic liquor. As a rule the "pint-lifers" were the poor. Rich and insolent bootleggers could only be convicted on "income tax charges," so powerful was their graft in politics from the bottom almost up to the very top.

Yet with this remarkable record of crackpot paternalisms, the U. S. A. is going to try and be ultra paternal again by socializing medicine, breaking the news gently to the taxpayer by "social security schemes" "Health insurance" and similiar bilge.

If any of these *AAAAAAA theorists* had ever read much history or owned the ability to digest what they read, they would realize that not since the days of mythology down to these hours of communistic triumphs of far too great an extent, has it ever been possible to standardize or to stabilize time and its changes, the tides or the winds. Such is the immutability of life and its ways—the changes of time are the only certainties. All other ingredients in life lack (death alone excepted and even there the value is equivocal) *any positive actuarial basis*. To walk the air, man needs at least a tight-rope or slack wire. Neither is offered in any of the schemes and schisms set forth by proponents for social security, health insurance or state medicine. And again the medical profession is warned in the words of Vergil,

"Non tali auxilio nec defensoribus istis, Tempus eget"—"Not such aid nor such defenders does the time require."

WE MUST WORK IN SEASON AND OUT OF SEASON AGAINST INSIDIOUS PROPAGANDA

Although few of the socialistic-paternalistic schemes for controlling and supervising the activities of the medical profession have as yet been permanently established or enacted into law by the National Government or by many of the various State Legislatures, the danger of such legislation in the near future has reached an alarming state. If we desire to preserve the traditions and principles of our noble profession and prevent its practitioners from being made mere cogs in a great political machine we must work in season and out of season against the insidious propaganda of the amateur and professional uplifters, who, in order to obtain more

power—and profit—are seeking to standardize and socialize the medical profession, not only to its injury but also to the injury of the public at large.

Inasmuch as the medical profession of the United States is practically unanimous against these iniquitous schemes, it seems necessary to "scotch the evils" at their inception just as we "scotched" the health insurance proposition at the New Orleans meeting in 1920 when the House of Delegates of the American Medical Association was unanimously on the right side, notwithstanding the strenuous efforts of the propagandists for five years "to put it over on us."

THE PARAMOUNT BUSINESS OF MEDICINE

The message sent to the members of the Wisconsin State Medical Society by the president, Ralph M. Carter, is worthy of quotation; for in it Dr. Carter says in part:

"The task now confronting the members of the medical profession is to prove themselves to the American people and to demonstrate to the people that no scheme of state medicine can take the place of private practice. To do this we must re-affirm certain ideals and prove to the people that we are living up to them. The chief and most important of these ideals is, that the health and well-being of the public is the paramount business of medicine. We must make this our chief concern."

WASTE

At various times various people have estimated that the U. S. loses annually these sums from these causes:

Crime: \$12,000,000,000.

The Common Cold: \$2,000,000,000.

Automobile accidents: \$1,600,000,000.

Occupational accidents: \$610,000,000.

Accidents in the Home: \$590,000,000.

Public accidents: \$450,000,000.

Fire: \$248,763,856.

Hessian fly: \$150,000,000.

Cattle ticks: \$100,000,000.

Coddling moth: \$20,000,000.

Ox warble (a pest): \$10,000,000.

Prairie dogs in Nebraska: \$80,000.

Last week Professor Wilfred William Robbins of University of California's College of Agriculture announced that weeds cost the U. S. \$3,000,000,000 a year. With weed waste included, the annual U. S. wastage appears to be equal to nearly one half of the national income, which was \$53,000,000,000 last year.

MEDICAL ECONOMICS

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Edited by the Committee on Medical Economics
of the
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Kankakee, Illinois

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Address all letters and communications to the Chairman.

The result of the recent presidential election makes a definite decision by the medical profession in regard to their program of education on medical subjects very important. There is no doubt that the high standard of medical service rendered in this country, in comparison with the rest of the world, must form the basis and foundation of our arguments and talks on this subject. If we can convince the general public and the governmental authorities that the medical service rendered in the United States is superior to that in any other part of the world, we have made a great advance in our struggle to maintain the present order. All who have studied the facts know that the above is indisputable. So, the problem becomes one of education and publicity. This cannot be carried on by any one man or group of men in a state. The entire medical profession must be informed thereon and must be willing and able to make talks to any and all groups from whom the invitation can be obtained to present the fact on the subject.

For the past two years a small group of physicians of the Illinois State Medical Society have been talking to medical and lay groups on this subject. Their welcome has been most hearty for the public are always interested in the subject of health. It is the consensus of opinion among the men who have done this work that the response from the lay groups addressed has been most satisfactory and that definite progress is being made in the campaign of publicity. However, as yet the surface has not been scratched and there is a crying need for more speakers, well informed and willing to give a little time to furthering this progress. Through various sources the word has come to organized medicine that already this elemental campaign is bearing fruit and having an influence on those in high governmental authority, who after all, want to give the people what they, the people, really want, provided those in power know what this is

and there is no organized minority which can wield sufficient influence to put over their own selfish desires. Facts and figures will be gladly furnished any member of the Illinois State Medical Society who desires to prepare to help in making these talks. Just write to Miss McArthur, Secretary of the Educational Committee of the Society, at 30 North Michigan Avenue in Chicago, telling her what you wish and she will see that you receive the same.

Your Committee on Medical Economics is continuing its study of the problems of economic interest to the physicians of Illinois. So many are the new problems arising and so little definite information is obtainable when they make their appearance, that this study is difficult. As a result the committee has adopted the plan of assigning to each member thereof a definite subject for investigation and study, with instructions to report back at the next meeting of the committee. This plan is working quite nicely, and at the next meeting of the Council in Peoria, early in January, considerable definite information should be ready to report. We will include in this column copies of those reports made which are of general interest as rapidly as they come in, so that the rank and file of the profession may know exactly what is going on.

At a recent meeting of the Committee, the subject of publicity was discussed at length. All present were opposed to publicity by individuals, particularly as it affects special cases. They all agreed that the medical profession was overlooking a great opportunity by not getting newspaper publicity for the talks made by members to lay groups. The newspapers in most communities have been more than willing to cooperate with the speakers in reporting the meetings and have asked for copies of the speeches. In many cases these were not available while in others the speaker was undecided as to whether he should do so. This subject will be further discussed at the next council meeting and if the

consensus of opinion is that it is ethical to do so, some plan of obtaining newspaper publicity will be worked out with the assistance of the Educational Committee.

The problem of syphilis has received great publicity in the past few months as a result of the interest of Dr. Parran, head of the U. S. Public Health Service. Dr. I. H. Neece of Decatur has made a special study of the subject and reported to the Committee at the last meeting and his report will be presented to the Council at the next meeting. A copy of his report will be included in this column this month. We hope that you will all have time to read the same, due to the great interest on the part of the laity resulting from the publicity given the talks of Dr. Parran as well as the articles which have appeared in large metropolitan newspapers. This appears to be another place where the medical profession can both aid and be aided by a great campaign of publicity now well under way. Surely the part organized medicine has played in the war upon syphilis is not to be apologized for nor to be concealed. If we can be of further assistance in bringing this disease under control we should be more than willing to receive some of the credit for both past and future performance.

The new Illinois Occupational Disease Act is now in force, as of October 1, 1936. This is of great interest to industry, labor and the medical profession. Dr. Phil Kreuscher, Chairman of the Council, was greatly interested in the Act, prior to the enactment by the Legislature. Now that it is in force, he has consented to write an article explaining the relation of the medical profession to the act and how practicing physicians will be affected by it. This article will also be included in the column this month. It should be read by every man who does any industrial work at all, and should be of interest to every man in the medical profession.

Reports from several sources indicate that the subject of Group Hospitalization continues to be a lively one. According to a recent checkup, organization plans are under way only in Chicago and Peoria in Illinois. Apparently, there continues to be a great difference of opinion in Chicago and the decision as to the position the Chicago Medical Society is to play has yet to be decided. We should all watch the success or

failure of these plans wherever they are in operation, so that when the time comes when they are up for discussion in our communities, we the medical profession will be able to lead in making the final decision as to its practicability in our individual community and not allow some high pressure salesman, with a personal selfish interest stampedes the public into some scheme which is not satisfactory. Only an alert, fully informed medical profession will be able to present the facts to the public when the time comes. If the plan is satisfactory, it will spread. It must remain under the supervision of the medical profession and not be organized for the profit of any one or any group of individuals. It would probably be wise for organized medicine to withhold endorsement or disapproval of any plan until the subject can be studied longer. A special committee under the leadership of Dr. C. E. Wilkinson of Danville is and has been studying the subject intensively the past two years. They will continue to report to the Council and the medical profession from time to time as they get definite information and arrive at definite conclusions as to the practicability and ethics of the plan.

E. S. HAMILTON,
Chairman of Committee on Medical Economics.

RESOLUTION ON SYPHILIS

WHEREAS, The plague of syphilis has been kept alive by secrecy and that public knowledge of its ravages is needed to conquer it; and

WHEREAS, Statistics indicate that one-tenth of the population of the United States has, or has had syphilis, and the United States Public Health Service has conservatively reported 518,000 new cases annually, with 683,000 cases constantly under treatment and observation, and that in the State of Illinois the Department of Public Health reported in 1934, 17,428 cases; 1935, 15,628, and up to September 1, 1936, 11,884 new cases, and

WHEREAS, It is estimated that 50% of all cases of syphilis are innocently acquired and that if proper treatment be administered, 90% of all primary infections can be cured; 60% in the secondary stage can be cured; 45% of all latent cases can be relieved and rendered non-infectious, and the economic loss appreciably reduced in one decade, and

WHEREAS, Civilization has risen as ignorance

has been dispelled, and disease has been conquered, as knowledge of it has spread; health standards have improved in proportion to the number of people who have been taught the desirable attributes of health, and

WHEREAS, Publicity is the most potent means available for the widespread distribution of pertinent information and the dissemination of news;

Therefore, Be It Resolved, That the information and facts about syphilis should be thoroughly publicized, as to its social, physical and economic consequences, through the press, radio, and public address, so the public may become syphilis conscious, and be it further

Resolved, That the Committee on Medical Economics thoroughly acquaint themselves with the programs of Dr. Parran, Surgeon General of the United States Public Health Service, and of Dr. Frank Jirka, the Director of the State Department of Public Health, and submit a detailed report to the Council at the next regular meeting in January.

Be It Further Resolved, That a copy of these resolutions be presented to Drs. Parran and Jirka, and that the facilities of the ILLINOIS MEDICAL JOURNAL be made available for such information as the National and State Departments desire for the discussion of the plans of the set-up under the Social Security Act, and that a steering Committee from the Council be appointed to aid and advise with the Health Departments in launching a campaign of publicity against syphilis.

Respectfully submitted,

I. H. NEECE, M. D.,
(Chairman of the Committee.)

NEW ILLINOIS OCCUPATIONAL DISEASES ACT

On March 16, 1936, Governor Horner signed a new Occupational Diseases Act for Illinois, which was passed by the Third Special Session of the Legislature. This Act became effective October 1, 1936.

Prior to the passage of this new Act there was no remedy in Illinois for a man who became disabled due to an occupational disease unless the occupational disease was caused by some poisonous chemical, mineral or other poisonous substances. All non-poisonous dust diseases such as "silicosis" or "asbestosis" were not compensated for, even if the employer was grossly negligent

in not using the proper preventive measures.

The new Occupational Diseases Act, by Section III, provides that where an employee in this state sustains an injury to his health or death by reason of a disease contracted in the course of his employment, and proximately caused by the negligence of his employer, that he shall have a right of action against his employer for unlimited damages, except in cases of death not to exceed \$10,000.

The so-called common law defenses are abolished. That is to say, the employer can not say that the disease which the employee received through the negligence of his employer was caused by a risk which the employee assumed in his employment, or that it was caused by a fellow servant, or that the disease was caused in whole or in part by the contributory negligence of the employee, where such contributory negligence was not wilful.

Any employer to whom this Act applies, and it applies to every employer of this state, except the farmer and private householder, may escape the stringent provisions of Section III by electing to provide and pay compensation in accordance with the compensation provisions of the new Act. If the employer so elects to provide and pay compensation, then the case is tried before the Industrial Commission and the question of whose fault it was that caused the occupational disease does not enter into the picture. If the employer elects, the Act defines an occupational disease as meaning a disease arising out of and in the course of the employment. Ordinary diseases of life to which the general public is exposed outside of employment are not compensable, except when the disease follows as an incident of an occupational disease as defined in the Act.

The employee, in case of disablement from an occupational disease, is entitled to all necessary medical, surgical and hospital treatment which will reasonably effect a cure, except in cases of "silicosis" or "asbestosis," because these two diseases are recognized as incurable. The liability of the employer is limited to a period not to exceed six months in this case.

Practically 23 of the 34 sections which compose the new Occupational Diseases Act were taken from the Workmen's Compensation Act, which takes care of accidental injuries. Under the new Act it is the duty of the employee to

notify his employer as soon as practical after disablement from an occupational disease. A demand for compensation must be made within six months after the occurrence of disability from occupational disease, and an application for compensation must be filed with the Industrial Commission within one year after the date of the disablement, or within one year after the date of the payment of the last compensation, if any has been paid.

The employer who is liable under the provisions of this Act is the one that last exposes the employee to the hazards of an occupational disease, and an employee is conclusively deemed to have been exposed to the hazards of an occupational disease when for any length of time, however short, he is employed in an occupation or process in which the hazard of the disease exists. In case of "silicosis" or "asbestosis" the only employer liable is the last employer in whose employment the employee was last employed during a period of sixty or more days after the effective date of this Act. The purpose of that last provision was to make certain which employer was liable. It may easily be that an employee may not have been exposed long enough in an employment to receive the full effect of the disease, but to make certain whom he shall sue it was deemed best to make the last one that exposed him to the hazards of the occupational disease liable.

Like the Workmen's Compensation Act, it is the duty of the employer to furnish the necessary medical treatment, but the employee may choose his own doctor at his own expense. The employer has a right to reasonable examinations after disablement to determine the condition of the man and to prepare a defense in case he is sued under the compensation features of this Act.

Whenever, after the death of an employee, any party in interest files an application for adjustment of claim under this Act, and it appears that an autopsy may disclose material evidence as to whether or not such death was due to the inhalation of silica or asbestos dust, the Industrial Commission, upon petition of either party, may order an autopsy at the expense of the party requesting same, and if such autopsy is so ordered, the commission shall designate a competent pathologist to perform the same, and shall give the parties in interest such reasonable notice of the time and place thereof as will afford a

reasonable opportunity to witness such autopsy in person or by a representative.

It shall be the duty of such pathologist to perform such autopsy as, in his best judgment, is required to ascertain the cause of death. Such pathologist shall make a complete written report of all his findings to the Industrial Commission (including laboratory results described as such, if any). The said report of the pathologist shall contain his findings on post-mortem examination and said report shall not contain any conclusion of the said pathologist based upon the findings so reported.

By that it is meant that the pathologist is to give only his findings, and not conclude that the cause of death was, for instance, arsenical poisoning. In other words, he may give all his findings, which may go to make up his conclusion of arsenical poisoning, but his conclusion as to the cause of death must not be contained in the report.

The report of the pathologist is filed with the Industrial Commission, and becomes a public record. Either party may produce any evidence to rebut any part of the report.

If an autopsy is performed at any time without the express or implied consent of an interested party, when the opposing party is known or reasonably ascertainable, and without the said interested party being given reasonable notice and reasonable opportunity of witnessing the same, all evidence obtained by such autopsy shall be barred upon objection at any hearing. This does not apply, however, to autopsies by a coroner's physician in the discharge of his official duties.

Under the compensation features of the new Act, a man is paid for disability which is defined as the event of being disabled from earning full wages at the work in which the employee was engaged when last exposed to the hazards of the occupational disease by the employer from whom he claims compensation or equal wages in other suitable employment.

No compensation is payable on account of an occupational disease unless disability as defined in the Act occurs within one year after the last day of the last exposure to the hazards of the disease, except in case of occupational diseases caused by the inhalation of silica or asbestos dust and, in such cases, within three years after

the last day of the last exposure to the hazards of such disease.

During the regular 1935 session of the Legislature, attempts were made to pass various acts relating to occupational diseases and they failed. A companion measure, known as the Health and Safety Act, gives the Industrial Commission, after a hearing, the right to make reasonable rules which will have the force and effect of law for the prevention of personal injuries and dis-

eases. In carrying out the details of this Act, consultation and advice of physicians will be necessary and essential. The medical provision will play an important part in carrying out the duties imposed by the new laws. The main object of these laws are, first, prevention, second, adequate care, and third, reasonable compensation.

P. H. KREUSCHER, *M. D.*,

Chairman of the Council, Illinois State Medical Socie

1937 ANNUAL MEETING, PEORIA, ILLINOIS, MAY 18, 19, 20, 1937

The 1937 Annual Meeting of the Illinois State Medical Society will be held in Peoria on May 18, 19, 20, 1937. All meetings will be held at the Pere Marquette Hotel, and all exhibits will be placed in this same building.

The Peoria Medical Society, acting as the official host for the meeting, has selected Dr. E. C. Kelly of Peoria as general chairman of the Committee on Arrangements, and the list of committees has been delivered for publication.

1937 ANNUAL MEETING, PEORIA, ILLINOIS, MAY 18, 19, 20, 1937

COMMITTEES

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E. C. Kelly

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Victor Williams

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Harry Durkin
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Ray King
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Walter Baer
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Wilbur Bowen
David Fey
J. E. Bellas
William Roche
E. C. Burhans
J. H. Bacon
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E. H. Bradley
C. H. Brobst
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T. W. Floyd
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C. O. Thomas
C. Turner
C. Welton
Walter Wyatt

C. V. Ward

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Orville Barbour, *Chairman*
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Fred Maurer
A. E. Cohen
Carl Sibilsky

PUBLICITY

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George Michell, *Vice-Chairman*
L. Rutherford
G. M. Frye
B. Heymann

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E. P. Burt, *Vice-Chairman*
George Borin
P. F. James
J. E. Meloy

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E. S. Gillespie, *Vice-Chairman*
Joel Eastman
S. Horwitz
E. L. Davis
Fred Stiers

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Fred Decker, *Vice-Chairman*
J. Foley
P. B. Goodwin
H. C. Morris
P. B. Weins

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Harry J. Ireland	George Cohen	W. T. Marrs
Milo Easton	William Blender	A. S. Plummer
David Fey	J. R. Bierly	J. C. Robert
Hugh Cooper	FINANCE	F. L. Stiers
OBSTETRICS & GYNECOLOGY	Leslie Rutherford, <i>Chairman</i>	S. A. Smith
William Michael, <i>Chairman</i>	Allan Foster, <i>Vice-Chairman</i>	A. H. Clark
William Cooley, <i>Vice-Chairman</i>	L. A. Burhans	Chas. Sneller
E. P. Burt	F. G. Hopkins	Harry Durkin
Bryant Trewyn	George Washburn	C. G. Farnum
C. J. Heiberger	Clarence Magaret	W. Cutter
ALUMNI & FRATERNITY DINNER	PRESIDENT'S DINNER	E. Z. Levitin
W. D. Madison, <i>Chairman</i>	W. H. Holbrock, <i>Chairman</i>	Hugh Cooper
Oliver Rian, <i>Vice-Chairman</i>	J. E. McCorvie, <i>Vice-Chairman</i>	Arthur Sprenger
Glen Allen	F. E. Fielding	R. A. Hanna
W. Weinkauff	J. H. Mathis	C. U. Collins
GOLF	James Walsh	George W. Parker
William Major, <i>Chairman</i>	VETERAN'S DINNER	L. Rutherford
Harold Diller, <i>Vice-Chairman</i>	E. E. Nystrom, <i>Chairman</i>	T. C. Coggeshall
J. F. Duane	L. C. Ives, <i>Vice-Chairman</i>	R. L. Eddington
C. G. Farnum	C. D. Sneller	T. S. Egan
C. Turner	G. H. Stacy	L. E. Monroe
Harry A. Durkin	F. F. Hass	E. Ross
Fred Stuttle	Hugh Cooper	Walter Baer
HOTEL	Arthur Sprenger	E. C. Burhans
W. A. Malcolm, <i>Chairman</i>	Milo Easton	SCIENTIFIC EXHIBITS
L. V. Boynton, <i>Vice-Chairman</i>	Sumner Miller	M. G. Bohrod, <i>Chairman</i>
J. B. Jennings	E. A. Garrett	J. E. Bellas, <i>Vice-Chairman</i>
Walter King	REGISTRATION	F. E. Hammitt
Oliver Rian	K. N. Petri, <i>Chairman</i>	E. E. Howard
STAG DINNER	James Walsh, <i>Vice-Chairman</i>	Max Pollock
J. T. Jenkins, <i>Chairman</i>	W. B. Eicher	WOMAN'S AUXILIARY
C. V. Ward, <i>Vice-Chairman</i>	William Roche	Mrs. Milo Easton, <i>Chairman</i>
Patrick Cusick	E. L. Aaberg	Mrs. J. E. Bellas, Registration
B. Adelsberger	ATTENDANCE	Mrs. William Kinckle, President's Luncheon
John Sloan	Milo Easton, <i>Chairman</i>	Mrs. E. Coleman
A. D. Phillips	C. Heiberger, <i>Vice-Chairman</i>	Miss Mary Knapp, Transportation
LADY PHYSICIAN RECEPTION	Clarence Fischer	Mrs. Hugh Cooper
M. B. Meloy, <i>Chairman</i>	Harry L. Berman	Mrs. J. Jenkins
Mildred Merkle, <i>Vice-Chairman</i>	C. G. Blake	Mrs. James Walsh, Hygeia
Ethel Cooper	R. C. Bradley	Mrs. F. Meixner, Bridge Dinner
Helen Coyle	H. B. Knowles	Mrs. E. C. Kelly
Lucia H. Lucy	E. A. Garrett	ENTERTAINMENT (Tea)
M. D. Robertson	A. G. Ekonomou	Mrs. J. Vonachen, <i>Chairman</i>
E. H. Stone	W. A. Gott	Mrs. H. Durkin
COMMERCIAL EXHIBITS	P. F. Jones	GOLF
George Seward, <i>Chairman</i>	Clarence Magaret	Mrs. Hugh Cooper, <i>Chairman</i>
E. C. Burhans, <i>Vice-Chairman</i>	A. P. Kannapel	Mrs. P. Jenkins
	D. D. Kirby	

Correspondence

THE OPERATION AND FUNCTION OF THE ILLINOIS RESEARCH AND EDUCATIONAL HOSPITAL

To the Editor:

From time to time requests for information concerning the operation and function of the

Illinois Research and Educational Hospital come to us, and it was thought that a letter published in the Journal would aid the Physicians of the State in becoming better acquainted with this Institution.

The Research and Educational Hospital is a teaching and research Institution. It is operated jointly by the Department of Public Welfare and

the University of Illinois through Legislative Act and Articles of Agreement, for the care of indigent patients only, who are residents of the State of Illinois. The Hospital is staffed by members of the Faculty of the College of Medicine of the University of Illinois. Being an educational Institution patients are accepted in the Hospital primarily on the basis of their value for teaching and study.

We are naturally anxious to cooperate with, and be of assistance to the Doctors of the State, and not in competition with them. The number of charity patients, both in Cook County and down State, is far greater than the Institution can care for. We have a Hospital of 365 beds, and in our Dispensary we take care of approximately 400 patients per day; yet we are turning away from 200 to 300 patients a week, that we are unable to care for.

On entering the Dispensary patients are required to fill out a social service sheet, approved by the Council of Social Agencies, and everything is done to limit our patients to those deserving charity. The survey made a year ago under the auspices of the Chicago Medical Society revealed that a relatively low percentage of persons attending the Clinic were able to pay. If patients are able to pay we encourage them to go to their neighborhood Doctor, and in recent months a large number have been so referred.

For those patients from outside Cook County, we insist on a letter from a duly licensed Physician from their Community, requesting medical service for the patient and stating their impression of the case; also the patient's inability to pay. Sometimes the patient is sent to us for assistance in diagnosis, to be returned to the local Doctor for the treatment suggested. When a down state patient is discharged from the Hospital we write the local Doctor, referring to the pathological conditions found and to the treatment administered while here, and, if requested, suggestions for future care.

Physicians are welcome at any time to visit the Hospital and to see for themselves the work we are doing. We are always glad to receive suggestions as to how we can be of greater service to them.

Sincerely yours,

MAJOR H. WORTHINGTON,
Managing Officer.
DAVID J. DAVIS,
Dean, College of Medicine.

STATE MEDICAL SOCIETY, EYE, EAR, NOSE AND THROAT SECTION

The program of the Eye, Ear, Nose and Throat Section of the Illinois State Medical Society meeting to be held at the Pere Marquette Hotel, Peoria, May 18, 19, 20, 1937, is now being made up.

Any member of the Section desiring a place on the program is requested to communicate with the undersigned and give title and a synopsis of the paper, as the number of places is limited it is suggested that prompt action is desirable.

The papers will be limited to twenty minutes and the subsequent discussion to three minutes each.

Chairman of Section,
JOHN A. CAVANAUGH, M. D.,
30 North Michigan Blvd.
Chicago, Ill.
C. B. VOIGT, M. D.,
1702 Broadway, Mattoon, Ill.
Secretary.

SOCIETY PROCEEDINGS TRI-COUNTY MEDICAL SOCIETY

One of the largest and best meetings of Tri-County Medical Society was held in Kewanee on October 30th. The meeting attracted more than 150 persons, including visitors from Iowa and officers of the Illinois State Medical Society.

The papers, all of particular interest to the general practitioner, were presented by Doctors Paul B. Magnuson who discussed "My Ideas About the Treatment of Arthritis, Both Medical and Surgical"; Charles A. Elliott, "The Management of Cardio-Vascular Disease," and Harry M. Richter on "Gastroduodenal Ulcer and Its Surgical Treatment."

The members of Henry County Medical Society were hosts for the meeting and P. J. McDermott arranged the program with the assistance of the Scientific Service Committee of the Illinois State Medical Society.

EDUCATIONAL COMMITTEE

November, 1936

SPEAKERS' BUREAU:

45—Popular health talks were presented by members of the Illinois State Medical Society before representative lay organizations.

Comments received from program chairmen of these groups show service is filling need. "Very well presented and very well received. Best health talk for lay group ever heard."

"Talk was very good, excellent in fact, and very much appreciated by our club."

"A most interesting and inspiring talk."

"Very interesting. He seemed able to put his finger

right on the sore spots in child training that mothers often overlook."

"Talk was very instructive, interesting and fully appreciated."

The Educational Committee has been invited to sponsor a panel discussion on medicine and its opportunities for a selected group of fifty young men from the North Park College in connection with a Vocational Guidance project of the Chicago Association of Commerce and the Chicago Rotary Club.

SCIENTIFIC SERVICE:

19—Scientific programs were arranged for medical societies.

The Committee has an excellent list of speakers from which to draw and can fill appointments in any part of the state if sufficient notice is given. The list includes a number of doctors from St. Louis who are willing to address groups in the southern part of the state.

RADIO:

22—Popular talks and programs were given over Chicago stations. The Committee has tried some round table discussions which seem to create interest and also some questions and answers programs. This type of program will be introduced occasionally to vary the straight talks given by members of the Chicago Medical Society.

Copies of these radio talks are available to other societies wishing to use them over local stations. They are also available for program material for mothers study groups or other lay organizations.

PRESS SERVICE:

20—Health articles to newspapers using monthly service.

85—Health articles to Chicago and Cook County newspapers.

341—Health articles to down state newspapers.

Releases to newspapers about medical programs:

27—Lee County.

32—Southern Illinois Medical Association.

45—Bureau County.

13—Chicago Medical Society.

Articles written and approved:

Cold in the Head.

Complications of the Nasal Cold.

Medical Christmas Gifts.

About Pneumonia.

Is Your Child Protected Against Diphtheria?

The Child Who Will Not Eat.

Library service:

192—Health articles to Chicago Public Libraries.

336—Health articles to downstate Public Libraries.

78—Health articles to Home Bureau Advisers.

ASSISTANCE TO COUNTY MEDICAL SOCIETIES:

86—Notices sent for Livingston County.

142—Notices sent for Lee County.

284—Notices sent for Bureau County.

139—Notices sent for Perry County.

57—Letters mimeographed for Woman's Auxiliary.

MISCELLANEOUS:

The Committee was represented in a conference of the Summer Round-Up Chairmen and officers of the Cook County Parent Teacher Associations held at the Stevens Hotel, Chicago.

The Committee was represented at a meeting called by Dr. Johnson, Superintendent of Schools, Chicago, to discuss cooperation and health programs to be carried on in the Chicago schools.

A new display called MEDICAL CHRISTMAS GIFTS FOR CHILDREN is being shown in the window of the Marshall Field & Co. Annex. This exhibit showing the number of children in quarantine during the 1935 Christmas holidays will attract much attention.

JEAN McARTHUR, Secretary.

WOMAN'S AUXILIARY TO ILLINOIS STATE MEDICAL SOCIETY

PROGRAM

A suitable program is different in every locality, consequently the program committee of a Woman's Auxiliary is obliged to select that which is appropriate in their community. The first and important thing to do in a newly organized Auxiliary is for the Program Committee to devote the most of their time during the first meetings in establishing a social acquaintance and a cooperative spirit of service. The same should likewise be revised each year in the older Auxiliary. A united desire upon the part of the membership to carry out the high ideals of the State and National Auxiliary means success.

The American Medical Association is broadcasting over the Red Network "Ladies and Gentlemen: Your Health." This health message with dramatic action and music is brought to you each week in thirty minutes of absorbing drama—Tuesdays at 5:00 P. M. E.S.T. An effort should be made to have as many people in the community as possible listen in, as well as to our State Radio talks over WAAF each Tuesday and Friday at 3:15 P. M. daylight savings time: WJJD each Tuesday and Thursday at 10:00 A. M. daylight savings time: WBBM each Friday, time varies: WGN each Tuesday, time varies.

Each Auxiliary Program Chairman should provide for her information the National Quarterly News Letter sent out by the National Press and Publicity Chairman, Mrs. James P. Simonds, 25 E. Walton Place, Chicago, Ill., at the expense of one dollar.

Hygeia is our principal health magazine and a constant endeavor should be made to increase its circulation, due to the fact that it presents to the public the ideals of organized medicine. Clippings from this magazine on most any health subject are available for borrowing and may be kept ten days. These will be sent from the Bureau of Health and Public Instruction, 535 N. Dearborn St., Chicago, Ill.

The importance of the Public Relations function of the Auxiliary has been emphasized by the members of the Medical Profession as our greatest duty in bringing about understanding between the Profession and

the Public. Some of the organizations which have performed most effective service are Parent Teacher and Pre-school Associations, Federated Women's Clubs, the League of Women Voters, and the Auxiliary to the American Legion, therefore; we should endeavor to assist these and other organizations in the promotion of their health programs by providing speakers and other information materials. The Illinois State Medical Society, 30 N. Michigan Ave., Chicago, Ill., maintains a Speakers' Bureau with suggestive topics for health programs suitable for Men's clubs, Women's clubs, Parent Teacher Associations and other organizations.

Encourage the admiration of the Medical Profession and cooperate with them in their endeavors.

Signed:

MRS. A. B. MIDDLETON, Program Chairman,
603 North Mill St., Pontiac, Ill.

IOWA AND ILLINOIS CENTRAL DISTRICT MEDICAL ASSOCIATION MEETING

Erwin R. Schmidt, M. D., F.A.C.S. professor of surgery at the University of Wisconsin School of Medicine will address the Iowa and Illinois Central District Medical Association December 17 at the Lend-a-Hand Club in Davenport, Iowa on "Anesthesia and Surgery." Louis Barding, M. D., F.A.C.S. of Moline, Illinois, will open the discussion on Dr. Schmidt's paper which will be continued by L. A. Block, M. D., of Davenport, Iowa, and Charles G. Beard, M. D., of Sterling, Illinois.

J. E. Rock, M. D., F.A.C.S., of Davenport, Iowa, will present a case report on Streptococic Septicaemia Secondary to Osteo-thrombotic Mastoiditis with recovery—Surgery—Transfusions—Pooled Serums. P. A. White, M. D., F.A.C.S. of Davenport, Iowa, will open the discussion on Dr. Rock's case.

Yours truly,

JAMES DUNN, M. D., Secy.,
Iowa and Illinois Central District Medical
Association.

SAFE PRACTICES IN INDUSTRIAL USE OF CARBON TETRACHLORIDE

On the basis of animal experiments and on the assumption that monkeys resemble human beings most closely of the animals used and rats next most closely, Henry Field Smyth and Henry F. Smyth, Jr., Philadelphia (Journal A. M. A., Nov. 21, 1936), conclude that 100 parts per million of carbon tetrachloride is a safe working concentration for continuous exposure of workmen during the working day. Concentrations considerably higher than 100 parts per million are safe for short periods of exposure. It is believed that 1,000 parts per million is a safe peak concentration for half an hour a day, with an average of 100 parts per million during the rest of the day; that is, day after day exposure in industry. If the average person recognizes more than a faint odor on entering the workroom, an increase in ventilation is called for. An animal continuously exposed to small amounts of carbon tetra-

chloride soon regenerates originally damaged liver cells and somewhat later regenerates damaged kidney cells, the regenerated or entirely new cells being more resistant to the vapors than were the original cells. It is concluded from this that in most cases men continuously exposed to small concentrations of carbon tetrachloride increase their resistance rather than increasing their susceptibility. This contrasts strongly with the action of benzene, the safe concentration of which is also set at 100 parts per million, since with that solvent injury may be progressive even after exposure is stopped. Of the total of ninety-six men exposed to carbon tetrachloride in industry, tests showed no one who could be considered seriously or even unmistakably injured by the solvent vapors. Nineteen of these men had worked more than ten years with the solvent, one of them twenty-five years. Although no unmistakable clinical test has been found to determine whether or not a given worker is being injured by carbon tetrachloride before the injury has progressed, it is believed that physical examinations of exposed workers carried out at least twice a year, including determination of the icteric index, blood calcium van den Bergh reaction and visual field mapping and general health, will establish strong probabilities. This program would protect men from more than the first stages of carbon tetrachloride injury, and men detected in these first stages do not have a progressive condition and hence will return completely to normal when their exposure is stopped. In most cases such men will attain added resistance by regeneration of injured cells during a short rest from exposure, although occasional men probably will be found who cannot work with carbon tetrachloride at all.

RELIEF OF LABOR PAINS BY USE OF PARALDEHYDE AND BENZYL ALCOHOL

Howard F. Kane and George B. Roth, Washington, D. C. (Journal A. M. A., Nov. 21, 1936), state that in their technic of particular importance is the thorough cleansing of the lower part of the intestine and rectum with a soapsuds enema followed by irrigations with physiologic solution of sodium chloride until the return is absolutely clear. The dose of paraldehyde is 1.2 cc. to each 10 pounds (4.5 Kg.) of the weight of the woman at the beginning of labor. The dose of benzyl alcohol is always 1.5 cc. To the required amount of paraldehyde is added 1.5 cc. of benzyl alcohol and the mixture is instilled by gravity into the rectum by means of a funnel and a large catheter, which is inserted for a distance of about 4 inches (10 cm.). As the solution disappears it is followed by not more than 30 cc. of physiologic solution of sodium chloride. Paraldehyde-benzyl alcohol is given as soon as the patient complains of pain. The dose, and always the full dose, may be repeated if necessary, one and one-half hours after the first. As labor progresses it will be found that the effect of each successive injection is more lasting, the intervals between repetitions becoming three, four or five hours. If the patient is awake one-half hour after the initial instillation of the rectal solution, one-fourth

grain (0.015 Gm.) of morphine is given subcutaneously. When several doses of the mixture are given, the rectum should be irrigated with physiologic solution of sodium chloride before each alternate instillation. To minimize dehydration, a glass of orange juice or water should be given before each injection of paraldehyde-benzyl alcohol. The patient is usually capable of cooperation to the extent of drinking; otherwise dextrose, intravenously, may be given. Since the patient is not conscious of bladder distention, catheterization is performed every eight hours. The rectal injection should be repeated when the patient begins to awaken, not after she has become restless. Complete relief from the memory of pain was accomplished in 89.7 per cent. of 611 patients, partial relief in 2.6 per cent. and no relief in 7.7 per cent. There were 3.3 per cent. of stillbirths and neonatal deaths; three, or less than 0.5 per cent., were from causes undetermined and may be charged to the method. However, since two such deaths had occurred in the preceding 1,000 cases before any anesthetic had been given, it is possible that the use of paraldehyde and benzyl alcohol may not have been the cause.

LITTLE KNOWN FACTS ABOUT INHERITANCE

Racial coloring is inherited as a "dilution" character. There is no possibility of a "throw-back" to a pure black as popularly supposed.

As the geneticist understands inheritance a bacterially-caused disease is never inherited. Syphilis may infect the embryo or foetus and the child may be born syphilitic. Tuberculosis may infect the child at or immediately after birth. In neither case, however, is this inheritance.

Skin patterns, that is, fingerprints, hair whorls, etc., are inherited probably as "mosaic" patterns.

Blood groups are inherited apparently in a Mendelian or unit-character fashion.

In certain cells, notably those of the salivary glands, the "genes" or carriers of unit characters within the chromosomes have actually been seen.

Geneticists believe that hereditary factors are the most important ones in the cause of cancer. Yet the person does not inherit cancer. He inherits characters which predispose toward tumor formation, toward certain types of tumors and toward tumors arising in certain organs. Without these inherited characters true tumors will never develop. With them a myriad of intrinsic causes will incite to the beginning of tumors, malignant or otherwise.

Body-build, constitution, etc., while inherited, are probably transmitted through the endocrine system.

Form, texture of teeth, jaw-size are all inherited, but not always from the same forebear, which probably accounts for most malocclusions.

RELATION OF SANATORIUM TO TREATMENT OF TUBERCULOSIS

LeRoy S. Peters, Albuquerque, N. M., (*Journal A. M.* A., Nov. 7, 1936), reasserts that Dr. Trudeau's experi-

ment in the Saranac Lake section started the country on a sanatorium-building period which ultimately placed sanatoriums in practically every state in the Union. In the early days the sanatorium treatment consisted of rest, good food, fresh air and expert supervision. There was little else to offer the patient. The progress of the disease had to be watched and the prognosis given by what the clinician could gather from physical examination and clinical symptoms alone. The advent of the X-rays and the various laboratory tests for determining activity and the progress in general were yet to come. Sanatoriums can boast results that were never dreamed of by home treatment, because there is nursing supervision and routine is carefully looked after. Education of the tuberculous is best accomplished in the institutions. There is no more comparison between the sanatorium-educated patient and the home patient than there is between the correspondence school pupil and the student of a recognized university. The one is as handicapped in his fight for continued health as the other in his struggle for economic existence.

PRESENT STATUS OF CYSTOMETRY

D. K. Rose, St. Louis (*Journal A. M. A.*, Nov. 7, 1936), believes that the clinical value of cystometry lies chiefly in its identifying the bladder to clinicians as an organ of practical physiologic importance in differentiating all types of neurogenic from physically obstructed bladders, so that treatment may have a better foundation, and in offering bladder function tracings to explain symptoms and determine the results of treatment in dysuric bladders. Clinically, it quite alters the usually accepted view of bladder importance in prostate and bladder surgery, particularly in relation to infection. It differentiates types of dysuria after surgery, childbirth, trauma and disease or injury of the brain or spinal cord. For experimental work undoubtedly a continuous graph is necessary, but for clinical or bedside work methods of interrupted readings, that is, introducing 50 cc. and then taking a reading, are satisfactory. A second tracing at each examination is absolutely necessary, not to verify the first but to note on the second curve the influence of the first filling. In general the normal or irritable bladder is stimulated to decreased capacity and increased pressure, while the low sensation type of neurogenic bladder shows diminished sensation with increased capacity after the distention of the first filling.

SHUFFLE

Professor: "Can you give me an example of a commercial appliance used in ancient times?"

Student: "Yes sir, the loose-leaf system used in the Garden of Eden."—*Siren*.

HEALTH NEWS ITEM

The coming elections prompt the question as to whether plastic surgery hasn't found some way to transfer bone from a statesman's head to his back.

Original Articles

THE ETIOLOGY AND PUBLIC HEALTH ASPECTS OF DEGENERATIVE VASCULAR DISEASE

C. ELLIOTT BELL, M. D.

DECATUR, ILLINOIS

It is a well-established fact that cardiovascular disease is yearly becoming a more important cause of death. An analysis of statistics published by the Illinois Department of Public Health elicits the fact that fatal cardiovascular impairment now occurs twice as frequently as it did two short decades ago.¹ Closer inspection of these statistics reveals several interesting facts. During the past decade the death rate from all forms of heart disease among the people under twenty years of age has decreased by one-half. A less marked, but nevertheless significant decline of mortality from cardiovascular disease is present in the 30 to 35 age group. From the age of 35 there is a gradual ascent until at the age of 54 we discover that the mortality has increased approximately 21%. While the decline in the younger age group offers encouragement, the rapidly increasing losses of those at an age which ought to place them in the very prime of life constitute a challenge to the medical profession.

In this latter group, arteriosclerotic vascular disease predominates. It is generally recognized that arteriosclerosis is the most important, most common and the most abstruse of all vascular lesions. Not only is the etiology obscure, but the very nature of the condition is undecided. One reason why the discussions in the literature are so confusing is that a number of lesions are included under the name of arteriosclerosis, so that now one, now another is being referred to.

The problem may be somewhat elucidated by a consideration of the lesions which characteristically affect the various types of arteries. Thus it has been demonstrated that arteriosclerosis is typically found in the larger vessels which constitute the so-called elastic group of arteries. Likewise, it has been shown that Mönckeberg's sclerosis is found characteristically in the me-

dium-sized arteries which compose the so-called muscular group, while diffuse hyperplastic sclerosis is characteristic of those smaller vessels generally known as arterioles.

Atherosclerosis: Atherosclerosis is found most frequently in the aorta and its immediate branches such as the carotids, subclavians, and the iliacs, although it may occur in smaller arteries. As a group, their most prominent feature is the great abundance of elastic fibers in the middle coat. The essential lesion is the atheromatous plaque, which represents a deposit of lipid material in the depths of the intima together with the resulting tissue reaction.

Almost everything has been blamed for this condition. Because of their very multiplicity, it is impossible to review all of the suspected causes. It is regarded as a disease of old age, a consequence of that vague thing called "stress and strain of life." However, in many old people there is no trace of atherosclerosis, and marked atherosclerosis may occur in the very young. Yet as Sir Clifford Allbutt expresses it, "It cannot be supposed that the stealthy hours carry away no quality of tissue, no quantity of energy."

Additional evidence that "stress and strain" play a part in the production of atherosclerosis is not lacking. In congenital stenosis of the aorta atheroma is most prominent, or even exclusively found, in the proximal part of the aorta. Atherosclerosis of the pulmonary arteries is absolutely independent of atherosclerosis of the greater circulation and occurs only when an increased pressure is present within the pulmonary circuit. It is commonly seen, therefore, in cases of mitral stenosis, emphysema, and certain forms of congenital heart disease. Normally atherosclerosis does not occur in the pulmonary system because, as stated by Moschowitz,² the normal pulmonary pressure is unusually low, one-sixth of that within the aorta.

Again, atherosclerosis is most prominent in that portion of the vessel where the stress is the greatest, for example, at bifurcations and at points of narrowing of the arteries. This may be seen in the smaller vessels as well as the larger ones. Those commonly involved are the arteries of the Circle of Willis and the coronary arteries. Leary^{3, 4} has shown that the standard lesion in the coronary arteries is atherosclerosis. He has also demonstrated that the mechanism by which

Presented as part of Symposium on Vascular Diseases, Eighty-sixth Annual Meeting, Illinois State Medical Society, Springfield, May 21, 1936.

coronary atherosclerosis produces death varies in different age groups. In the young the deposition of lipid material in the intima results in fibrosis and narrowing of the lumen of the arteries. Sudden death is usually due to thrombosis. In old age the presence of lipid material does not stimulate fibrosis. The cells accumulate in large masses, the nutrition of which becomes inadequate. Necrosis and autolysis result in liquefaction of the cell masses and the production of atheromatous "abscesses." Rupture of these abscesses, when occurring in coronary arteries, usually produces sudden death.

Somewhat paradoxically, Denny⁵ has pointed out that stress per se may not be the only factor involved. In a statistical study he demonstrates the comparative rarity of coronary disease in men with occupations requiring *daily* physical effort, and show that it is most frequently found in individuals with sedentary occupations, whose lives have become progressively more inactive through the use of the automobile and other modern labor-saving devices. This suggests that physical inactivity, rather than the stress and strain of manual labor predisposes to it.

On the other hand, references are often seen in the literature concerning the frequency of coronary disease among golfers. Riesman and Harris⁶ state: "The majority of coronary individuals are active and athletic, often passionate golf players." At first sight this seems inconsistent, according to Denny, with the theory that physical inactivity favors the development of coronary disease. We must remember, however, that golf is not a *daily* exercise. It is usually played only once or twice a week for a period of about six months, following which there is an equal portion of the year when the average golfer takes little or no exercise. It is certain that playing golf in the manner here described offers no protection against coronary disease and may perhaps promote it. While little can be done to reduce worry and nervous strain, our physical activity *can* be controlled. Once it is recognized that coronary disease results, in part at least, from lack of muscular activity, we have a very definite point of attack. Obviously, one need is for a campaign of education to teach the public (and the profession) that *daily* exercise is one of the essentials of health; that strenuous

exercise taken occasionally or limited to only part of the year may be dangerous.

One of the most direct and repeated contacts that an organism has with its environment is through its food. When a substance appears as commonly in a diseased artery as does cholesterol, it seems obvious that there is some error in its utilization or elimination, or some local cause for its deposition in the vessel walls.

Many years ago Anitschkoff demonstrated that atherosclerosis resembling human atherosclerosis could be produced in rabbits by feeding them a diet rich in cholesterol. This work has been successfully repeated by others, notably by Duff,⁷ who has indicated the essential factors necessary for its production:

1. There must be a preliminary local alteration in the vessel wall, supposedly by some irritant such as bacterial toxin or chemical poison.
2. There must be an abnormally high blood cholesterol.
3. There must be precipitation of lipoids (cholesterol) at the point of injury.

Duff points out that the initial stage in the development of human atherosclerosis consists of local changes in the walls of the arteries themselves. In man, as in rabbits, there is every reason to believe that these changes follow as the result of some sort of injury to the arterial walls. The presence of such injury has been repeatedly found following infections such as influenza, typhoid fever, as well as other infectious diseases. The exact relationship of these changes to the formation of atheroma in humans is as yet, however, unknown.

Duff further points out, on the other hand, that experimental cholesterol atherosclerosis in rabbits and human atherosclerosis are not identical. In humans hypercholesteremia is *not* regularly found, and even when present, does not seem to accelerate the processes already inaugurated. If a disturbance of cholesterol metabolism occurs in humans the fact remains to be demonstrated in the future. This opinion has been expressed by others, notably Medvei in 1932⁸ and Elliot and Nazun⁹ in 1936.

So far as foods other than those containing cholesterol are concerned, it becomes constantly less obvious that any single one can be convicted of causing vascular degeneration. In the past tobacco and alcohol have had their day, but have,

for the present at least, been confined to oblivion as a cause of atherosclerosis.

Total food intake is another problem. McCay and Crowell¹⁰ have shown that rabbits fed a balanced diet so low in calories as to retard growth and maturity, have less atherosclerosis and a measurably longer life than those on so-called optimal diets.

From these considerations it seems likely that the prevention of acute infections offer a possible means for retarding the formation of atheroma. Whether the induction of mild malnutrition by dietary restriction will delay the development of degenerative vascular disease in man as it does in rabbits, remains yet to be demonstrated.

Mönckeberg's sclerosis: Mönckeberg's sclerosis is that type of hardening of the arteries observed in the superficial vessels of elderly people. The pipe-stem radials and tortuous brachials are not a manifestation of atheroma, but a primary medial degeneration accompanied by calcification. The arteries affected are medium-sized ones of the muscular type, especially those of the limbs and parietes. The distribution of Mönckeberg's sclerosis is patchy as in atheroma. The primary change is a degeneration of the muscular layer followed by calcification. These alterations cause no appreciable narrowing of the lumen.

This type of sclerosis is essentially a senile change, again the result apparently of the stress and strain of life. It has been described as the natural end of a worn-out vessel. At the International Conference held at Utrecht about three years ago, the only definite thing that could be decided concerning its etiology of degenerative vascular disease was that heavy manual labor predisposed to the premature development of Mönckeberg's sclerosis.

The effects of hard physical work can be seen in the arm and leg arteries of laborers. Marchand¹¹ has cited an interesting case of a man of thirty-five years who had poliomyelitis in childhood. There was marked evidence of Mönckeberg's sclerosis in the femoral artery of the normal leg but none in the artery of the paralyzed leg. The writer can glean from the literature no suggestion of a plan which will prevent this type of arteriosclerosis, and at the same time allow sufficient physical activity for self preservation under the present economic system.

Arteriolosclerosis: Thus far the arteriosclerotic changes described consist of nodular degeneration of the intima or calcification of the media. The arteries affected have ranged in size from the aorta to the coronaries. The lesions have had no relation to clinical hypertensive heart disease.

There is another lesion affecting what has been called the intimate vasculature of certain organs, and associated more or less constantly with an increased blood pressure. This is known as diffuse hyperplastic sclerosis or arteriolosclerosis. The lesion consists of a subendothelial thickening of the intima, hyaline at first, but later becoming fatty. The swelling of the intima causes great narrowing of the lumen, and sometimes complete obliteration. These changes are best seen in the kidneys, the splenic, pancreatic, and hepatic arterioles and the small vessels of the meninges, brain and brain stem.

The association of diffuse hyperplastic sclerosis and hypertensive heart disease has been definitely established by Fishberg¹² and others. Recently, the observations of Kernohan, et. al.¹³ have confirmed this fact. These investigators excised small portions of the pectoral muscles during life in cases of benign and malignant hypertension. Many of the benign and all of the malignant cases showed hyperplastic sclerosis of the arterioles.

Weiss¹⁴ has demonstrated that the most early significant change found in this form of vascular disease consists in an increase in the "tonus" of the arterioles with subsequent elevation of blood pressure. It is now quite generally accepted that arteriolosclerosis is the result of stress due to increased intravascular tension. The exact cause of this increased tonus is as yet undetermined. It has been assumed from indirect clinical evidence that it may be due to increased efferent sympathetic nervous impulses in the vasomotor system. This theory has been supported by the work of Hines, Brown, Schulze and Schwab.

Assuming that reactivity of the blood pressure is an index of vasomotor tonus, Hines¹⁵ and Brown have devised the so-called "cold pressor test" for the purpose of measuring this reactivity.

By the local application of cold (placing the hand in ice water) they have produced strong,

thermosensory stimulation resulting in elevation of blood pressure.

More than 98% of all subjects with essential hypertension showed maximal reactions of blood pressure. Individuals with normal blood pressures can be divided into two groups: those with minimal, and those with excessive (abnormal) reactions. It appears probable, that at least some of the latter group will develop hypertension in the course of time if exposed to accessory factors as strain, etc.

It would appear that this is a constitutional factor (hyperactive vasomotor system) which can be influenced by environment. Attention has been directed by Schulze¹⁶ to the significant fact that although arteriolar hypertension is practically unknown among the native African negroes, the disease is unusually prevalent in their descendants living in this country. He emphasizes the importance of environmental influences in the production of arteriolosclerosis in the American negro. His observation supports the theory advanced by Paul White that essential hypertension (and its subsequent sclerosis) is due, in part at least, to "The world's mad rush of today."

The control of this malady lies, it seems, in the early detection of hypertension by the family physician, by means of the "cold pressor test", as well as the usual methods of physical examination. When discovered the most effective means of treatment seem to lie in the thorough education of the patient in the pursuit of tranquility, in the early stages of the disease before irreparable vascular damage has occurred.

Summary: The cause of degenerative vascular disease is obscure. That increased stress is capable of producing all three types of arteriosclerosis is evident. Yet no single theory of etiology is wholly satisfactory in explaining premature death from disease of the blood vessels. There is, however, enough evidence at present to make it seem probable that there are controllable environmental factors which in some cases can be altered so as to delay or favorably alter the progress of vascular degeneration.

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FUNDUS CHANGES IN HYPERTENSION AND ARTERIOSCLEROSIS

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The retinal changes occurring in hypertension and arteriosclerosis have long been known as albuminuric, nephritic or arteriosclerotic retinitis. However, it has been suggested that they would be more correctly called retinopathies because the lesions are not inflammatory, but result from a circulatory disturbance. Of these the most important are the arteriosclerotic retinopathy and the hypertensive neuroretinopathy.

In the development of an arteriosclerotic retinopathy, the fundus first shows the vessel changes of a retinal arteriosclerosis. There is a reduction in calibre of the whole arterial tree. This is apparently closely correlated with the blood pressure. Some oculists say that they can estimate the blood pressure by the size of the arteries.

The light reflex from the arteries is normally the narrow streak reflecting the high light of the blood column. This becomes wider as the walls of the arteries become thickened and less transparent. The blood column is less clearly seen through this thickened wall and appears yellowish or even white at times when the artery is nearly obliterated. The arteries have then an appearance of silver wires and are called silver wire arteries or copper wire arteries. Yellow streaks may accompany an artery or vein caused by a thickening of the supporting structure or it may be the thickened vessel wall.

Where arteries cross veins, the latter are com-

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pressed. Only a denting may be seen, or the vein may seem to be obliterated entirely at this point. At these crossings the vein tends to cross at right angles. Distal to the crossings the vein is distended, tortuous and darker because of the blocking of the return flow. Later the arteries become irregular in calibre. Circumscribed constrictions and dilatations develop just as patches of sclerosis develop in the aorta and other large vessels, rather than an even thickening of the walls.

Most of the vessel changes are due to an endothelial proliferation of the intima of the larger retinal arteries. The lumen is thus narrowed. There is also a connective tissue increase in the walls with hyalin degeneration which increases the visibility of the arterial walls. The denting of veins by arteries crossing them results from the common sheath which encloses them at this point. The thickening of the arterial wall and the increased tension within the artery encroach on the space of the softer vein.

Other changes forming the picture of an arteriosclerotic retinopathy are hemorrhages and exudates. The hemorrhages are small, about the width of a retinal artery. If deep in the retina they are round, if superficial they are linear. They often lie along a vein. As a rule they are not very numerous, but they may be many scattered through the fundus.

Exudates form within several disc diameters of the macula. They are white, shiny, hard and flat, of irregular outline. In size they are small, from a half to two times the width of a disc vein. They tend to form groups and coalesce into larger patches. At times these form a partial ring about a disc diameter in width, encircling the macula about one or two disc diameters from it—the circinate retinitis. The hemorrhages are absorbed or leave more white spots which are a fatty degeneration due to poor blood supply.

This disc may be more red than normal, or yellowish; its outlines are clear. Media are clear and the color of the fundus normal. The condition develops gradually and may remain about the same for years. The patient often has no eye symptoms unless a hemorrhage involves the macula in which case there is a diminution of vision.

Local vascular accidents are apt to occur in

patients with an arteriosclerotic retinopathy. Thrombosis of the central vein or one of its branches is the most frequent of these. The fundus distal to the thrombosis is filled with many fine linear hemorrhages all radial to the disc. The veins are engorged and very tortuous so that loops appear and disappear in the swollen retina. The arteries are often seen with difficulty because of the hemorrhages and edema of the retina. The disc margins are indistinct, often the disc indistinguishable. The retina is edematous.

The onset is sudden, usually at night so that the patient notices a marked loss of vision on getting up in the morning. No discomfort is experienced unless other complications such as a glaucoma develop. As the condition lasts, the hemorrhages slowly absorb, the venous distention decreases and finally atrophic vessels are seen accompanied by white streaks or replaced by them. Some pigment disturbance occurs throughout the fundus. On the disc fine new vessels may develop. The disc becomes pale. The thrombosis occurs just behind the lamina cribrosa. If only a branch of the central vein is thrombosed the changes are limited to the area supplied by this branch. The loss of vision is not as severe in this case. The thrombosis occurs in this case usually at an arteriovenous crossing.

A case typical of this recently presented itself. A woman, Mrs. M. S., aged 65, was referred by her physician who had been treating her for hypertension. For several weeks the right vision had been noted to be poor, but nothing had been done about it. Her right corrected vision was 20/50, the left 20/20. In the left fundus the following was noted: The disc was sharply outlined, somewhat yellowish. The retinal arteries were about half the size of the veins instead of the normal two-thirds. Veins were deeply indented by arteries, and veins somewhat enlarged and tortuous peripheral to such crossings. Arteries were decidedly yellowish with wide light streak. A few very fine white dots were seen near the macula. There were no hemorrhages.

In the right eye were seen the same vessel changes except that beginning about a disc diameter above the disc, there was an area filled with hemorrhages. This extended from above the disc nearly down to the macula temporally. The veins were decidedly tortuous and the arteries hard to find with the hemorrhages and white exudate in the retina.

Marked arteriosclerotic changes were present in both fundi. It is possible that if her eyes had been examined earlier and the condition recognized more vigorous treatment could have been instituted and the thrombosis prevented. A week after the examination the blood pressure was down to 148/100.

The picture of hypertensive neuroretinopathy begins with an arteriolar sclerosis rather than a sclerosis of the larger retinal vessels. The arterioles become tortuous, the walls yellowish. About the macular region, vessels not usually seen become visible as small corkscrew branches. There is severe narrowing at the blood column, marked indenting of veins by arteries. A swelling of the nerve head occurs early making the disc outlines indistinct. This swelling extends out into the retina for a varying distance. The disc may be pale if there is a secondary anemia or there may be a venous hyperemia. The veins are engorged and tortuous.

Soft fluffy white patches appear in the retina. These are called "cotton wool" patches. They vary in size being about a half disc diameter and may be so numerous that a dense white ring is formed around the disc. They are seen only within a few disc diameters from the disc. Some of the shiny white patches may also be found about the macula. The "cotton wool" patches later become shiny and flat. In the macula itself is the star figure of white lines radiating from the center. This may be only a few lines, or may completely surround the disc.

Hemorrhages are present. They are flame shaped or linear and small. They run parallel to the vessels and are numerous near the disc but not so numerous as in a thrombosis.

In the nerve head is a serofibrinous exudate and the white spots are made up of large cells laden with fat. There is edema between retinal elements and elongated hemorrhages in the nerve fibre layer. The arterioles show intimal thickening.

Hypertension always precedes the retinal changes. The retinal arterioles are probably involved in the general vasoconstriction that produces the hypertension. The arteriosclerotic retinopathy occurs chiefly in essential hypertension. The hypertensive neuroretinopathy occurs in the end stages of glomerulonephritis and essential hypertension. It is not found in focal nephritis. Nephroses in which albuminuria is greatest, do not develop this picture. The picture develops in the hypertension of pregnancy and occasionally in acute glomerulonephritis.

The prognosis is grave when a hypertensive neuroretinopathy is found. A patient seldom lives more than a few months (occasionally

years) after this develops. In the hypertension of pregnancy the prognosis is not so bad but it is an indication for immediate termination of the pregnancy. In acute glomerulonephritis, also, there is occasionally recovery, but it indicates a severe process.

VERTIGO AS A SYNDROME IN VASCULAR DISEASE

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Any discussion of vertigo must be based on a clear conception of what is meant by the term. One might begin by defining it as an apparent displacement experienced by an individual in relation to his surroundings. Such a definition would recognize *movement* as the first essential of vertigo. The patient may feel as if he is turning around or as if the room is revolving about him (rotational vertigo); the floor or ceiling may appear to tilt towards him or to feel like the deck of a ship at sea instead of firm ground (tactile error); or he may feel a strong pull forwards, backwards or to one side (pulsion). *The awareness that the experience is false* constitutes the second essential, serving to differentiate vertigo from the ataxias of tabes and similar diseases where the sensation comes after the loss of equilibrium has taken place. A third feature is a strong tendency towards compensatory movements; the person affected will put out a hand, lean against a wall or merely stand still for a moment. Add further that the onset is abrupt and the duration of the attacks generally brief and we have all the elements that enter into a description of vertigo.

In describing these sensations people as a rule use the word, "dizziness." This term, however, is also employed as a synonym for many unpleasant experiences such as spots before the eyes, things growing black before the eyes, double vision, head noises, nausea and various emotional states. It is important not to accept a simple complaint of "dizziness" without further questioning since, whatever our idea may be as to significance of flashes before the eyes or some of

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the other symptoms which the patient may really have in mind, there can be no doubt as to the meaning of an attack of true vertigo. We know that this indicates a disturbance either in the internal ear or in the pathways leading from the labyrinth to the brain or in the brain itself and as such demands our serious attention.

It is not my intention here to enter into a description of the vestibular apparatus. This can be found in any text-book on otology. It is sufficient for our purpose to recall that the organs in question consist peripherally of the three semicircular canals, utricle and saccule in the internal ear; that these structures are connected with certain vestibular nuclei by means of the vestibular part of the eighth nerve; and that further pathways run from the nuclei respectively to the anterior horns of the spinal cords, posterior longitudinal bundle and through several relays to the cortex of the temporal lobe. Vertigo arises as a result of stimulation of the last named ending and is a specific sensation peculiar to the vestibular apparatus. Its significance from a biologic standpoint may be appreciated when we realize that it is scarcely ever experienced either in healthy men or in animals under normal conditions. Ordinarily the labyrinth and its associated cerebral connections act in an automatic manner to maintain equilibrium by making adjustments of the eyes, limbs or body in response to deviations of the head from its accustomed position; there is no cortical activity involved and no accompanying sensation. It is only under circumstances such as rarely arise normally for animals, such as a fall with repeated whirling through the air, that sufficient stimulation of the labyrinth takes place to cause vertigo. This final effect must be considered as an emergency bell rung by nature notifying the individual that his ship is, so to speak, out of control and that he must make every effort to avoid a crash.

If vertigo is to be interpreted as a warning signal under physiologic conditions this is even more true in clinical practice. In the vestibular apparatus we possess an extremely sensitive indicator which reacts in its specific way not only to definite lesions of the labyrinth or its intracranial connections but to many indirect influences such as toxins from distant foci, irritations of nerves in close proximity to the ear or the

vestibular centres in the brain, increased intracranial pressure and finally to what I consider the most frequent source of vestibular disturbances in general practice, namely, alterations in the blood supply to the internal ear or its centres in the brain. It can be readily understood that the specific causes of vertigo are legion: I shall attempt to enumerate most of these in discussing the differential diagnosis later but for the present will confine myself to those of vascular origin.

Vertigo arising from disturbances of the circulatory system may be listed as follows:

A. Vasomotor instability without evidence of structural pathology in the blood vessels. This group comprises a large percentage of cases in which vertigo and other eighth nerve symptoms occur. In certain individuals, because of a congenital or acquired abnormal sensitivity of the vegetative apparatus, spasms are apt to occur either in the internal auditory artery or in some of the terminal vessels supplying the vestibular centres in the brain with resultant anemia of the parts supplied and attacks of vertigo, nystagmus and ataxia which are often extremely violent and may last for hours. There is no doubt that this is the basis of most of the so-called cases of Ménière syndrome.

Under the heading of vertigo due to vasomotor disturbances can probably be included the prodromal vertigo of epilepsy, a large percentage of the vertigo in chronic post-concussion states and certain cases of migraine which are accompanied by transient loss of one-half of the field of vision and violent vestibular upsets. I recall in particular a physician who had been subject to spells of this nature since childhood. I saw him during an attack with a marked spontaneous nystagmus and vertigo of an extreme character; the ocular findings had already begun to recede.

B. Blood dyscrasias. Any of these from simple anemia to the leukemias may cause vertigo owing to insufficient oxygenation of the vestibular structures. In addition leukemic deposits and degenerative changes in the internal ear are also responsible.

C. Circulatory disturbances with organic changes in the blood vessels of the internal ear or brain; under this heading I beg leave to include hypertension even without demonstrable arteriosclerosis. These patients are particularly

apt to complain of dizziness on stooping or arising quickly. The basic reason for the symptom lies in the inability of the sclerosed vessels to adjust themselves quickly to the effects of gravity with resultant transient anemia. In cases of essential or other hypertension with vertigo although there is on first thought an ample supply of blood to the brain it will be found as a rule that the diastolic pressure is not constant with the same result—momentary anemia. It might be mentioned that abnormally low blood pressure is a far less frequent cause of vertigo than hypertension.

D. Cardiac abnormalities. Doctors Bishop and Bishop in a recent study of 5,000 histories of cardiac disease found syncope or vertigo as a primary complaint in 274 patients. Of these 218 had had electrocardiograms, analysis of which showed a wide variety of cardiac conditions, including 59 normal charts. Either an accelerated heart such as occurs in paroxysmal tachycardia or a retarded one where the apex beats do not reach the periphery may be involved. In the first type the cause of the insufficient blood supply reaching the brain is found in the attenuated diastolic pause resulting in inadequate filling of the chambers with a resultant diminished output; in the second the same thing occurs because premature beats expel less blood into the circulation than a normal beat and may produce no arterial pulsation at all. An important group of symptoms is composed of vertigo or syncope attacks combined with extrasystoles which are evident only at the apex and a slow pulse; this is the well known Stokes-Adams syndrome due to partial heart block. It must be remembered that in cardiac cases vertigo represents the mildest form of cerebral anemia due to deficient heart action; more pronounced cases lead to transient faintness; and still more severe involvement to attacks of complete unconsciousness with or without convulsive seizures.

The diagnosis takes in two factors. First, we must determine whether or not there is a true vestibular disturbance. In many cases the patient's description so evidently fulfills the requirements of true vertigo that we may be fairly certain, particularly if some evident cause such as a real cardiac abnormality or vascular is discovered, that we are dealing with a genuine vestibular disturbance and not some neurasthenic

complaint. Even in those cases, however, it is best to look for corroborative evidence. If the patient is seen during an attack he should be examined for spontaneous nystagmus. This is best sought for with the aid of Frenzel's glasses—an electrically illuminated spectacle frame with strong convex lenses which I have found invaluable in bringing out latent nystagmus as well as in helping to differentiate between the peripheral and the central types. The patient is examined with the glasses on not only in the sitting position, but on his back, abdomen and side; he is made to change position quickly, stoop and shake his head with the object of inducing vertigo if this is not present at the moment and at the same time watching for nystagmus. In an experience embracing over 1,000 cases of vertigo from various causes I have yet to see an instance where the complaint was present at the time of examination in which I have not detected spontaneous nystagmus at the same time.

The second factor involves the diagnosis of the site at which vertigo is produced, i. e. whether in the internal ear or in the brain and if possible, the approximate location in the brain. This usually requires training and experience in neuro-otology. The type of vertigo present, the kind of nystagmus which is elicited under the Frenzel glasses, the presence of ataxic manifestations as past pointing, drift reaction or Romberg and their relation to the slow component of the spontaneous nystagmus, the presence or absence of tinnitus or impaired hearing simultaneously with the vertigo attacks and the results of the cochlear and vestibular examination between attacks may all be necessary to formulate an answer. It might be stated that improved methods of testing the labyrinth have largely eliminated the use of large quantities of cold water and the maximal turning tests which can be very unpleasant and even dangerous in arteriosclerotics; more exact information can be obtained, particularly in the type of case under discussion with the use of minimal caloric and rotatory stimuli which give no subjective disturbance.

The diagnosis of the particular cardiovascular condition involved is, of course a matter for thorough study of the individual as a whole with particular attention to the circulatory apparatus. In many vasomotor disturbances, including some

with the most violent Ménièreform attacks nothing of a definite nature will be found between spells. In others repeated examination may be necessary to determine the cause. Functional conditions of the circulatory system must be differentiated from those of a more serious character and cardiac conditions in which vertigo is a prominent symptom such as partial heart block from other affects such as petit mal which it may resemble superficially. In the differential diagnosis of vertigo it must not be assumed to be on a vascular basis without a thorough examination of the ears, hearing and vestibular function and generally also a neurologic examination. A list of conditions other than those mentioned which can cause vertigo may be given as follows:

1. Within the middle ear:
 - a. Acute or chronic otitis media causing toxic absorption without an obvious lesion of the internal ear.
 - b. Obstruction of the Eustachian tube.
2. Within the internal ear:
 - a. Labyrinthitis, circumscribed, serous or suppurative, after middle ear infection.
 - b. Acute infectious diseases without middle ear infection.
 - c. Lues.
 - d. Herpes zoster oticus.
3. The eighth nerve:
 - a. Neuritis following any infectious disease.
 - b. Neurofibroma.
4. Intra-cranial conditions other than those mentioned:
 - a. Meningitis, serous or suppurative.
 - b. Brain abscess.
 - c. Tumors of the posterior fossa.
 - d. Systemic diseases as cerebrospinal lues, encephalitis, multiple sclerosis, etc.
5. Toxic vertigo: This includes various foci of infection in the teeth, sinuses, tonsils or other parts of the body and a large group of drugs which irritate the vestibular apparatus such as alcohol, nicotine or quinine.
6. Reflex irritations such as those from impacted teeth and plugs of cerumen in the external auditory canal have been known to cause vertigo. Usually the trigeminal nerve forms a part of the arc but irritation of the carotid sinus itself is also known to produce vertigo or syncope.
7. Emotional disturbances: It behooves us to be careful of this diagnosis as a cause, but there is no doubt as to this factor producing vestibular upsets. We are all familiar with the patient who grows dizzy or faints as a prelude to some trifling minor operation and I have myself witnessed a violent nystagmus as an accompaniment of this type of vertigo or syncope. The vertigo which occurs in some people on looking down from a

height is of the same type. It is probable that the vasomotor apparatus plays an important part in emotional vertigo.

Treatment: The treatment of vertigo of cardiovascular origin is, of course, essentially that of the cause. If the attack is a severe one the patient must be kept very quiet in a darkened room until the worst symptoms are over; as a rule little is tolerated by mouth and medication to decrease the sensitivity of the vestibular centres or to quiet the nausea which is a frequent accompaniment must be by injection or suppository. Many drugs such as luminal, chlorotone and scopolamin are recommended as sedatives; my own preference is for bromides particularly in the organic form such as sedobrol (Roche) for oral use; Bulbocapnin (Merck) can be given orally or by injection but has the disadvantage of being quite expensive. Between attacks in the functional vasomotor type the patient must be studied for signs of abnormal vagus or sympathetic activity. Those with small pupils, dry skin and slow pulse may be tried on atropin, those with large pupils, moist skin, frequent flushing and rapid pulse on pilocarpin. It is impossible in many cases to state whether the immediate cause of the labyrinthine storm is a vascular dilatation or a spasm so that treatment along this line must be empirical. Injections of acetyl-choline (.1 gm.) will relax a vascular spasm and adrenalin will sometimes terminate an attack indicating that a vaso-dilatation was at fault. In certain cases dehydration with a salt-poor diet and large doses of ammonium chloride after the method advocated by Furstenberg gives good results. Two more points: First, in vertigo due to hypertension don't be surprised if the vertigo increases in certain people when the blood pressure comes down—contrary to what might be expected. Second, be very cautious in advising surgical means of curing vertigo such as the division of the eighth nerve which is now much in the literature as these are still open to considerable reservation.

PREGNANCY TOXEMIA

It is common knowledge that the rigorous application of antenatal study has largely overcome all forms of pregnancy toxemia in institutional practice. More than 75 percent, if not nearly all, of the cases can be avoided.—Dr. P. Brooke Bland, of Philadelphia, in *J. A. M. A.*, Dec. 3,, 1932.

THE DIAGNOSIS OF PERIPHERAL VASCULAR DISEASES

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The development of widespread interest in peripheral vascular diseases has resulted in improved methods for the early diagnosis of these conditions as well as their treatment. The benefits thus obtained are evident, but it is entirely inadvisable to focus our attention too closely upon peripheral vascular phenomena without due consideration of the relationship of these blood vessel disorders to those of the entire cardiovascular system, even in those types which may seem to be primarily diseases of the extremities.

The large number of excellent papers which has been published on vascular diseases has greatly clarified the matter of their diagnosis. But confusion still exists. This is mainly for two reasons: 1. The subject seems complicated. 2. There is a general impression that special apparatus and complicated equipment are necessary for diagnosis. Neither is true. Most cases of organic arterial disease can be identified as such without special equipment. A fair degree of knowledge of the subject can usually differentiate functional vascular disorders. It is also true that in some cases differentiation as to type is impossible with all the equipment available in the most elaborate clinic. In fact, it is often possible to achieve as much with but little apparatus. However, the essential thing, recognition of the presence of vascular disease or its absence, can usually be made.

Pearse¹ comments on the importance of a careful history. The diagnosis often hinges on the story of the disease. The same can be said for general examination. The importance of this has been emphasized many times, and is particularly true in regard to consideration of the cardiovascular and nervous systems. Impairment of cardiac function, particularly disorders of mechanism, may be responsible for the rapid exaggeration of symptoms referable to structural arterial diseases in the extremities. Cardiac disease with the formation of thrombi furnishes the commonest source of arterial emboli. Meta-

bolic or infectious diseases are frequently the cause of circulatory impairment or may simulate impairment when circulation is adequate. Disease of the central or peripheral nervous system is capable of simulating vascular disease and is a common cause of peripheral vasospastic phenomena. The Raynaud syndrome is not uncommon as a manifestation of other diseases. Acrocyanosis is nearly always secondary.

Obliterating arteriosclerotic disease is usually part of a general atherosclerosis and cerebral cardiac and other manifestations may be present simultaneously. Thromboangiitis obliterans is essentially a peripheral disease but visceral vascular involvement has been reported with increasing frequency. Periarteritis nodosa is essentially a general visceral vascular disease but cases have been reported in which the initial symptoms were in the extremities.² Severe anemia, by pallor and even intermittent claudication,³ may simulate obstructive disease, and in polycythemia both arterial thrombosis and vasodilator phenomena are common.

The study of peripheral vascular phenomena is so inextricably bound to visceral vascular disease that the study of one must always be with ready recognition of the possibility of the others.

Pain is the outstanding symptom of organic disease. It is seldom present in the functional disorders and when it does occur is usually not severe. Pain, sudden in onset with maximum severity, intolerable in character, and relieved with great difficulty, is due to sudden arterial occlusion: either embolism or rapidly developing thrombosis. This represents an acute type of disease and pain is rarely absent. The chronic slowly progressive conditions such as thromboangiitis obliterans and arteriosclerosis obliterans, and the non-specific types of arteritis usually have a story of the gradual development of pain. It is not invariably present, but one type or another occurs at some stage in the progress of the disease. Intermittent claudication is the characteristic expression of ischemia and has long been recognized as such. Pickering⁴ states that in the absence of severe anemia it may be taken as an indication that severe structural disease of the arteries is present. Care must be taken not to confuse this type of pain with that of peripheral neuritis, particularly sciatica, static orthopedic conditions, and even arthritis.

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Pain at rest of a dull boring or burning type occurring particularly at night, especially if temporarily relieved by change in the position of an extremity, is extremely suggestive of arterial impairment sufficiently severe so that loss of tissue integrity is imminent if not already present. As the disease progresses, the pain becomes constant. Burning parasthesias are usually present in functional impairment of the capillaries and other small vessels of the skin. This type of symptom sometimes occurs in thromboangiitis obliterans in which vasodilator disturbances of the capillaries may occur, less commonly in arteriosclerosis, more often in chilblains and minor types of frost bite, and diseases and injuries of the skin with secondary vascular phenomena, or with inflammation.

The diagnostic methods applied for objective study may be considered in the order of the ease of their application. The abnormalities of appearance may be considered first. Gangrene is the result of prolonged interruption of blood flow. Indolent ulceration follows impairment of blood supply either organic or spasmodic and may be associated with chronic infection.

Abnormalities of color are important but must be given careful interpretation on the basis of the facts in the case and must be considered in relationship to skin temperature and other findings.

In the absence of severe anemia, local pallor indicates that the superficial vessels are empty. It is usually characteristic when the blood is massaged out of an extremity and inflow is impaired by organic or spasmodic constriction of the vessels. Pallor when an extremity is raised above the level of the heart, strongly suggests impairment of arterial inflow while the blood drains out on the venous side of the circulation. If rapid cyanosis follows when the limb is changed to a dependent position, the significance is increased. Persistent pallor occurs when the inflow of blood is limited to a marked degree or there is functional constriction of the superficial vessels as in the pallid stage of Raynaud's disease. Pallid skin on the hands or feet is always cold if the color is dependent upon impaired arterial inflow, regardless of whether the cause is organic or functional.

Redness of the skin is due to dilation of the superficial vessels. It occurs as the result of

local tissue injury. This may be the result of impaired blood supply; then heat loss is also present. Exposure to cold, chronic inflammation, exposure to ultra violet light or mechanical injury may also result in dilation of the superficial vessels. Redness with normal or increased temperature is compatible with normal or increased blood flow as in erythromelalgia.

Local cyanosis is due to local slowing of the blood stream inadequate to meet the oxygen requirements of the part. In cold skin, cyanosis may occur as a result of spasmodic constriction of the arterioles; under these conditions the conclusion as to its significance is impairment of arterial inflow, with return inflow of venous blood. If the limb is warmed the arterioles may be assumed to be dilated; local cyanosis then is strong evidence of structural arterial disease. Postural changes in color are common in persons with organic disease.

Palpation of the vessels of an extremity is perhaps the most widely used objective diagnostic method for determining the condition of the circulation. These findings are also open to certain errors of interpretation. It is usually assumed that pulsation in the dorsalis pedis and posterior tibial arteries indicate that the arterial circulation is intact. This is true only to the level of palpation. Occlusion may exist beyond. The absence of palpable pulsation need not indicate disease. The circulation may be normal or nearly so when no pulsations can be felt as in coarctation of the aorta or impaired cardiac function. In arteriosclerosis, there may be little or no pulsation and yet the circulation may be adequate through sclerosed and calcified vessels. The failure of pulsation when the limb is warm is strong evidence for occlusive disease but cannot be relied upon if it is the only finding. Visible capillary pulsations in the digits of an extremity after the limb has been warmed is good evidence of intact circulation.

Absence of pulsation always raises the question of anatomic variations in the location of the vessels. Reich⁶ in observations of 500 healthy persons found absent dorsalis pedis in 4%, and absent posterior tibial in 5%, while in another 8% the dorsalis pedis was found in other than normal location.

The presence of ischemia in absence of severe anemia manifested spontaneously as intermit-

tent claudication, or demonstrated by muscle action experimentally is indicative of impaired arterial circulation. It is necessary to exclude other types of pain which might be confused with claudication. Lewis, Pickering and Rothchild have employed this idea³ in a test of circulatory efficiency. With the patient recumbent, the ankle joint is repeatedly and fully extended against resistance at the rate of one movement a second. In complete experimental obstruction the pain appears in twenty to thirty seconds and disappears in five seconds. In diseased conditions the time for pain to appear and disappear may be of some importance in interpreting the amount of impairment. Samuels⁶ has used a similar test for ischemia. He places the patient recumbent and with the leg in the vertical position the foot is flexed and extended at the ankle. In addition to early pain and fatigue, conspicuous pallor of the plantar surface occurs.

The test for reactive hyperemia as described by Pickering⁴ has been found to be very useful and requires no apparatus but a sphygmomanometer. Two precautions are necessary to avoid error: 1. The peripheral vessels must be dilated. This is accomplished by having the body warm enough to insure maximum dilation of the vessels of the skin in the extremity to be tested, or by warming the limbs by the application of external heat. 2. The vessels of the skin must be empty of blood before the circulation is arrested.

After the extremity has been warmed it is placed in a vertical position with the patient recumbent. The hand or foot is flexed and extended at the ankle or wrist several times to expel the blood from the superficial vessels and the blood pressure cuff is then inflated above the systolic pressure. The extremity is then placed horizontal and kept warm for several minutes. When the pressure is released, a flush appears in the skin below the point of interruption and spreads to the digits normally in less than five seconds. It is bright in color and reaches a maximum in less than fifteen seconds and fades slowly. In structural disease the flush spreads slowly, is patchy or mottled, and is considerably delayed to the tips of the digits. The flush is then somewhat cyanotic in appearance and lasts longer. The reaction in persons with uncomplicated Raynaud's disease or acrocyanosis is of the

normal type. This test has been found to be of diagnostic importance in all cases of structural impairment to the arterial circulation.

Surface temperatures are the most widely used of all the objective methods for the determination of blood flow through an extremity. The temperature of the skin at any one point is the resultant of the heat brought to it largely by its blood supply and the heat lost from its surface.⁷ That other factors exist must be admitted and in health there are extreme fluctuations in temperature and marked variations with both environmental conditions and the vasomotor reactions of the individual. Small changes in environmental temperature, the presence of air currents, the humidity and rate of evaporation of the surface moisture are all sources of error which must be controlled. Thus it becomes evident that surface temperature unless controlled with great accuracy becomes a variable which is far from precise. It therefore is apparent that coldness of an extremity does not suffice for the diagnosis of either arterial disease or spasm. Normal vasoconstriction may be responsible. Unilateral coldness when both extremities have been exposed in the same way almost always indicates impairment of circulation. The temperature gradient is also important. A sudden decrease in temperature from the proximal to the distal portion of an extremity is evidence of impairment of circulation; a gradual one is not.

A rough idea of differences of surface temperature can be obtained by simple palpation. Differences of 1°C. can be appreciated after some experience and in many cases of structural disease the variations amount to 2-4 degrees. The most commonly used method is some form of thermoelectric couple, but a mercury thermometer may be employed.

The most important application of accurate surface temperature readings is that made before and after the release of vasoconstrictor tone for the purpose of determining the amount of vasoconstriction.

The use of the oscillometer is valuable if the information as to the state of the larger deep vessels is desired. The shape and height of the oscillogram determined at different levels of the same extremity and compared with readings at the same levels of the other extremity give a fairly accurate impression of the comparative

arterial inflow through the larger arteries. The location of occlusion in a large vessel may be demonstrated by recording the oscillation above and below the point. The extent of the collateral circulation cannot be estimated by this method. Used in conjunction with other tests it often is an aid in the diagnosis of organic disease.⁸ It is subject to errors of technic as well as interpretation.

Histamine reactions are likewise of value when used in conjunction with other tests. The intensity of the response is said to follow the temperature gradient of an extremity when there is impairment of arterial inflow.⁹ It fails to show evidence of arterial impairment if the collateral circulation is adequate for the nutritional needs of the tissues. In the presence of organic impairment of the larger arteries, a normal reaction indicates an adequate collateral circulation.

Chemical methods of investigation of the state of the circulation are sometimes employed. The oxygen tensions of the arterial and venous blood may be determined for comparison and are found to be nearly the same in arteriovenous aneurysms. In erythromelalgia also, the oxygen tension of the venous blood approaches that of the arteries.

Arteriography and the use of plethysmographs sometimes give important information, but are particularly useful in detailed studies of the circulation or for the determination of special conditions. Arteriography may locate the point of occlusion with accuracy, as well as demonstrate the extent of collateral circulation. It is of importance often in the location of arteriovenous communications. It makes it possible to differentiate the two main types of arterial occlusion.

The measurement of vascular tone can be used both for the determination of structural disease and for its differentiation from vasospastic disorders. Temperature readings of the skin surface before and after the release of vasoconstrictor impulses furnish a criterion for the test. Vasodilation may be produced by several methods in the clinical study of vascular diseases. These are: 1. Increased internal heat production. 2. Increased environmental temperature applied locally or generally. Temporary interruption of the vasoconstrictor pathway. There are several ways in which each of the general effects may be secured.¹⁰ The details are well

known. Scott and Morton¹¹ have established the fact that complete vasodilation will result in a temperature of 30.5°C. to 31.5°C. of the toes if the environmental temperature is at 20°C. On the basis of peripheral nerve block with local anesthesia they were able to divide circulatory syndromes into three main groups: 1. Occlusion alone. 2. Spasm alone. 3. Mixed spasm and occlusion.

Similar results can be obtained by other methods for the release of vascular tone: increased internal heat production by the induction of fever or the various methods for studying the effect of increased environmental temperature, either general or local. In the attempt to maintain proper heat elimination both vasodilation and sweating occur. The degree of vasodilation possible can be measured by means of skin temperature observations, properly controlled, or by a plethysmograph. Conclusions can be drawn as to the state of the circulation, as with nerve block. In the case of functional disorders the vasodilation is maximum. Exposure to cold either general or local is important for the study of the vasomotor disorders. The symptoms of vasodilator disorders not associated with impaired arterial circulation are improved if exposed to moderate cold. Temperatures of 16° to 18°C. are most effective if employed locally. Pain is increased with organic disease even when the superficial vessels are dilated. The same degree of cold is most effective in inducing the Raynaud paroxysm. Lower degrees are usually followed by reactive vasodilation.

By the appropriate application of these methods of diagnosis the presence or absence of organic arterial disease can be determined. The differential diagnosis as to the specific type of disease is more difficult and occasionally is impossible.

The sudden arterial occlusions can be usually identified by the abruptness and severity of the onset of symptoms. Only occasionally is pain absent in embolism. In the chronic arterial occlusions, the age and sex of the patient are important.

The incidence of thromboangiitis obliterans in women is so small that it scarcely needs to be considered. Silbert¹² found only two cases in a total of 2,000 and admits only a total of nine in the literature. Race can no longer be considered

a deciding factor, and while the majority of cases are heavy cigarette smokers, tobacco apparently is not always important.

It seems reasonably safe to conclude that arterial occlusion in individuals below the arteriosclerotic age, in the absence of diabetes, is usually thromboangiitis obliterans. This is particularly true if the larger medium sized vessels are involved. Frost bite, specific and non-specific types of endarteritis must be considered if the small vessels only are involved. In the older age groups the differentiation from arteriosclerosis obliterans becomes more difficult. In fact, both diseases may exist at the same time. Demonstration of calcification of the vessel walls by x-ray occurs so frequently that little or no importance can be attached to it from a diagnostic standpoint except when occlusion without calcification exists. The presence of phlebitis with arterial disease is evidence for thromboangiitis obliterans. The absence of vein involvement does not exclude it. The differential diagnosis then often becomes a matter of clinical judgment.

Confusion of thromboangiitis obliterans with Raynaud's disease is not uncommon. The reason is that with the former, early in the course of the disease, local vessel spasms occur which simulate that of Raynaud's disease in that they are the direct result of exposure to cold.

Thromboangiitis obliterans can easily be confused with vascular reactions of specific types including frost bite, electrical discharges, chemical and bacterial injury. Acute arteritis has been reported during the course of many acute infectious diseases and even in association with gout.¹³ Tuberculous arteritis of the extremities is exceedingly rare, as is syphilis which so commonly involves the visceral vessels.

Functional disorders of the vasospastic type are exceedingly common if the minor variants of this group are considered. Cold moist hands and feet are associated with all types of neurosis regardless of cause. Autonomic instability in neurocirculatory asthenia, gastrointestinal neurosis and in the typical anxiety variety is almost invariably associated with vasoconstrictor phenomena involving the arterioles of the hands and feet. In some of these there is an associated color change which suggests the acrocyanosis type of disorder. In others there seems to be a resemb-

lance to the Raynaud type of syndrome. They cannot be classed in either group, nor can they be sharply defined.

Typical idiopathic Raynaud's disease is rare. Its confusion with thromboangiitis obliterans has been mentioned. Errors in diagnosis have been and are frequent. The disorder should be looked upon as a syndrome occurring in a number of definite clinical entities as well as of the typical idiopathic type. Scleroderma, paroxysmal hemoglobinuria, arthritis, tuberculosis and many other diseases have been found in association. The diagnosis is dependent upon the occurrence of the typical paroxysm coming on in intermittent attacks with discoloration of the hands or feet usually on exposure to cold, although emotional disturbances frequently precipitate the paroxysm. In addition, the following criteria have been suggested.¹⁴ 1. Symmetrical bilateral involvement. 2. Predilection of the disease for females. 3. Absence of clinical evidence of arterial occlusion. 4. Impairment of tissue integrity is limited to the skin. 5. Absence of organic disease to which the vasomotor changes might be secondary. 6. Two years should be the minimum period of duration of the disease for diagnosis.

Angiospasm in the peripheral vessels have been noted in many disorders of the central nervous system, as well as following injuries in which the nerve trunks have been involved, and even without evident nerve lesion. Cervical rib has occasionally been the cause. These secondary vascular spasms usually can be precipitated by exposure to cold.

Acrocyanosis is a purely functional disorder occurring usually in females, occasionally in males soon after puberty, in neurocirculatory asthenia, or after severe illness. It is characterized by cold moist hands of a bluish red color from a little above the wrists and increasing somewhat in intensity distally. They usually appear to be somewhat puffy. The patient is often not conscious of coldness, but complains of the appearance. Normal circulation and improvement of color can be demonstrated by any of the methods for the release of vascular tone although there may be some delay. No organic obstruction to the inflow of blood can be shown. Histamine is capable of releasing the spasm and in the area of injection a red flare appears

which has been interpreted as meaning that the spasm is arteriolar in location.

Erythromelalgia is a pure vasodilator disturbance and must be considered a primary disorder. It is exceedingly rare, and is characterized by the following features.¹⁵ 1. Bilateral burning pain in the extremities often occurring intermittently in attacks. 2. Increase in temperature of the parts affected with redness, flushing, and congestion. 3. Induction or aggravation of symptoms by heat and friction. 4. Relief by rest, cold, and elevation. 5. Increased oxygen tension of the venous blood.

It is to be sharply differentiated from the burning parasthesias seen secondary to other conditions. The most common of these are polycythemia vera, obstructive vascular disease, both thromboangiitis obliterans and arteriosclerosis, diseases of the central nervous system, inflammatory diseases of the skin, or injury to the skin by physical or chemical trauma.

Summary: In summary it can be said that a careful history and general physical examination are extremely important in the evaluation of the condition of the peripheral circulation. Many peripheral phenomena occur as a result of general or systemic diseases.

A study of this kind in addition to the application of the proper objective methods, without unusual or special equipment, is sufficient to establish the diagnosis of organic or functional vascular disorders, and usually to make the differential diagnosis.

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CEREBRAL VASCULAR DISEASE— HYPERTENSIVE ENCEPHALOPATHY

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Recently there has been renewed interest in the sudden occurrence of transient cerebral phenomena in hypertensive patients. In the past the syndrome, which is known as hypertensive encephalopathy, pseudo-uremia, acute uremia, hypertensive cerebral attack and cerebral crisis, has not received the attention and study that its frequency and importance deserve.

The attack is usually preceded by prodromal symptoms, the most frequent of which are headache, nausea, vomiting, drowsiness, weakness, anorexia and restlessness. During this period the blood pressure rises above the previous high level. This initial phase is followed by the actual attack which may be characterized by coma, twitchings of muscle groups, or generalized convulsions. Consciousness is almost always lost completely during the severe attacks and coma persists for a period varying from a few minutes to many hours after the convulsions or twitchings have stopped. Coma frequently occurs in the absence of convulsions. The blood pressure is always elevated and the elevation is often extreme. During the period of convulsions the patient becomes incontinent. He is often cyanotic and appears to be near death.

The temperature is usually elevated and the pulse is rapid. Physical examination during coma or in the interval between convulsions may reveal various neurological manifestations. Hemiplegia may be present. A Babinski or other abnormal toe signs is often found. Neck rigidity accompanied by a Kernig sign is seen

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in some cases. All of the positive neurological signs are of a very transient nature and may be present for a few minutes only. The retina usually presents definite abnormalities. These may vary from mere retinal arteriolar sclerosis to the advanced stage of hypertensive neuroretinopathy, which is characterized by arteriolar changes, hemorrhages, exudate, and papilledema.

The transient and fleeting character of the neurological signs, the inability to localize a lesion and the results of laboratory procedures usually establish the diagnosis. The cerebrospinal fluid pressure is often increased. There is no nitrogen retention in the uncomplicated case, the non-protein nitrogen or blood urea nitrogen being within normal limits. Renal function tests are seldom markedly impaired. The urine often contains a small amount of albumin.

A group of nine cases exhibiting the clinical features of this syndrome will be reported. Four were observed and treated on the medical wards of the Barnes Hospital, St. Louis, and five in the Peter Bent Brigham Hospital, Boston. Four recovered from the immediate attack. The remaining five dying during the seizure were submitted to complete pathological study.

This group of nine patients included five men and four women. The ages varied from 37 to 58 years, the average being 49. A family history of probable hypertension was obtained in six. Several of the clinical features are tabulated in Table 1.

All but one had been subject to headaches for many years. Seven complained of nocturia, one of epistaxis, and one of menorrhagia. The known period of hypertension varied from two months to fourteen years. Similar acute cerebral episodes had occurred in five on previous occasions.

A prodromal period characterized by headache, nausea, vomiting, drowsiness and confusion was reported in seven. This was soon followed by muscular twitchings in three and severe generalized convulsions in two. Death occurred suddenly in one patient after he had apparently recovered from a severe attack of headache, nausea and vomiting. In one patient the convulsions started in the left facial region, extended to the left arm, then to the left leg and finally involved the entire body in a severe gen-

eralized seizure. A febrile reaction was present in all but one, the maximum temperature being 104 degrees.

Sudden dyspnea was a prominent symptom in two patients. Puffiness of the eyelids was observed in two. Hypertensive neuroretinopathy was detected in five, arteriosclerotic retinopathy in two and retinal arteriolar sclerosis in the remaining two.

The blood pressure during the seizure varied from 178 to 270 mm. systolic and 112 to 150 mm. diastolic. The peripheral vessels were thickened in seven cases. There was moderate cardiac enlargement in most cases as detected by percussion but marked in one only. A few basal rales were heard in three instances.

The deep reflexes were hyperactive in three of the four recovered cases. One patient had a very transient hemiparesis. In one there was some question of a transient bilateral Gordan and in another a Kernig sign. Slight neck rigidity was observed in one.

Laboratory procedures were of invaluable assistance in making a diagnosis (Table 2) by excluding such conditions as uremia, syphilis and subarachnoid hemorrhage. The nonprotein nitrogen was determined in the four cases observed in the Barnes Hospital. It did not exceed 45 mg. %. The blood urea nitrogen was determined in the Peter Bent Brigham Hospital cases and exceeded 30 mg. % only once, and that in a patient who had been vomiting for several days and had taken practically no fluids during the same period. The two hour excretion of phenolsulphonphthalin determined in four cases varied between 15 and 75%. In the patient with low excretion marked mental confusion caused poor cooperation, making the determination unreliable. This same patient had a blood urea nitrogen of 28 mg. % and a urine specific gravity of 1.020. In two patients the specific gravity of the urine was 1.008 and 1.010 respectively but only one specimen was obtained from each. The lowest maximum specific gravity on regular voided urine specimens of the remaining seven patients was 1.017. This relatively high specific gravity without any attempt to obtain the optimum conditions of a concentration test indicates a good renal function. The ability to concentrate and the absence of nitrogen retention seem to exclude uremia. Albuminuria

was a constant feature but never exceeded a trace.

One patient had less than 3,900,000 red blood cells per cu. mm. This occurred in a woman who had been suffering from severe monorrhagia. A varying degree of leucocytosis was present in all during the acute episode. The maximum was 24,600 leucocytes per cu. mm. but only one exceeded 13,500 per cu. mm. The Wassermann reaction was negative in every case.

Lumbar puncture was done immediately after admission in seven cases. The cerebrospinal fluid pressure was elevated in four, the maximum being 550 mm. The pressure was 130 mm. in one and was not determined in the remaining two cases. In one of the latter cases marked cerebral edema was found at necropsy. No other spinal fluid abnormalities were detected.

The scope of this paper does not allow a detailed description of the pathological observations on the five cases examined after death (Table 3). This has been reported elsewhere.¹ Cerebral edema was prominent in two cases, both having a definite pressure cone. A lesser degree was noted in two of the remaining three brains. There was no evidence of cerebral hemorrhage or thrombosis in any case. There was no increased congestion of the vessels on the surface of the brain, pallor of a varying degree being present in all. The cerebral arteries and arterioles were involved in a generalized sclerotic process but was marked in one instance only.

The hearts were enlarged in all five cases but the degree of hypertrophy was usually no more than would be expected in hypertension of considerable duration. The weight of the five hearts varied between 420 and 775 grams but exceeded 590 grams in one instance only. There was slight coronary artery sclerosis in every case but all vessels were patent and there was no evidence of old or recent infarction.

The gross appearance of the kidneys suggested a vascular type of nephritis. The surface was finely granular in most cases. The combined weight of both kidneys varied between 210 and 340 grams. The histological picture was that of an arteriolar and arteriosclerosis, the type of lesion usually being observed in "essential" hypertension. Arteriolar and glomerular necrosis and the minute hemorrhages described in "malignant" nephrosclerosis were seen in one

case only. None showed evidence of a true glomerular nephritis.

This syndrome is not an entity that was unknown to the clinicians of the past century. In his discussion of cases with renal disease, Richard Bright² mentioned a patient who had convulsions with no unconsciousness. Bright was impressed by the unusual features of this case. The presence of consciousness suggests the absence of true uremia in this case but the lack of adequate function tests and blood pressure determinations makes it impossible to group it with the hypertensive cerebral attacks. Even in these coma usually occurs.

One of the earliest cases appearing in the American literature was that reported by Peabody.³ Several convulsive seizures preceded death in his patient. The autopsy revealed no changes in the brain, other than an arteriosclerosis of the cerebral vessels. All vessels were patent. There were no areas of hemorrhage, degeneration or inflammation. Similar observations were made in the cerebral vessels of the cases included in this report.

Pal in 1905 reported the occurrence of these cases and compared them with the convulsions occurring in lead encephalopathy. A year later Vaquez and Nobecourt compared these attacks with those seen in eclampsia. In all three conditions hypertension is usually present.

Osler, in the first edition of his text-book referred to Peabody's case. In 1911 Osler⁴ reported hypertensive patients he had observed with transient aphasia and paralysis. His cases were characterized by aphasia, sensory disturbances, motor paralysis and mental features such as confusion of thought and emotional upsets. He based the diagnosis on the existence of high tension and the slight or transient character of the attacks. Osler indicated that the prognosis of the immediate attack was good as many of his patients lived for years.

In 1914 Allbutt⁵ made the statement that he doubted that such attacks occurred without a definite organic basis. He criticized the lack of autopsy examinations and called attention to the difficulty of finding old small thrombotic lesions in the brain. It is true that very few of the early reports included postmortem examinations and this is still true of many of the later reports in the English literature. This feature stimu-

lated the investigation which led to this report. The fact that very few patients die during the immediate attack probably accounted for the lack of adequate pathological studies.

A few years later Volhard⁶ reported cases of "acute" and "chronic pseudo-uremia" and for the first time convincingly demonstrated that these cerebral episodes were not dependent on disturbed renal function. The acute type occurred in conditions where the hypertension was of relatively short duration, such as acute nephritis and eclampsia. This type was characterized by headache, vomiting, tachycardia, amaurosis, coma and convulsions. He attributed the symptoms in the acute type to cerebral edema. In chronic pseudo-uremia Volhard believed that the transient focal symptoms were caused by spasm of the corresponding cerebral vessels. The presenting symptoms of this group were transient aphasias, paralysis, mental confusion, convulsions or twitchings and unconsciousness. Autopsy examination of Volhard's cases revealed no focal lesions to account for the symptoms.

The edema occurred in his cases of acute pseudo-uremia and the pale bloodless brain in his chronic pseudo-uremia group. It was not possible to make such a distinct division in the five cases included in this report as both edema and vascular alterations were present in several of these brains.

Blackfan⁷ in 1926, called attention to the cerebral manifestations of acute glomerular nephritis, characterized by vomiting, headache, visual disturbances, tachycardia, slowing of the respiratory rate, coma, convulsions and ultimate death in some cases. The brains of these patients weighed from 20 to 30% more than normal, the convolutions were flattened, the surface was firm and tense and at the base there was invariably found the "medullary cone." These cases were accompanied by an increase in blood pressure, which Blackfan thought was the result of the cerebral edema rather than the cause. These cases would be included in Volhard's acute pseudo-uremia group.

Blackfan's cases are not comparable to those reported in this paper, however, as his occurred in children with acute nephritis and undamaged arteries, while these observations were

made in older individuals with the arterial changes that usually accompany hypertension.

In 1928 Oppenheimer and Fishberg⁸ reported the occurrence of these attacks which they termed "hypertensive encephalopathy." Their report consisted of one case only, a boy of 19 who had repeated attacks of convulsions over a period of many months. All blood chemical determinations were within normal limits. This patient was still alive when the paper was published.

Grant⁹ in 1932 mentioned the difficulty of differentiating some of these cases from brain tumors. He reported five such cases, two of them being submitted to craniotomy because of the mistaken diagnosis. No final pathological observations were given in his paper.

McAlpine¹⁰ described several cases of "hypertensive cerebral attacks." He divided his cases into two groups; namely, those with and those without signs of cerebral edema. The former included patients under 40 and was characterized by sudden appearance of severe headache, nausea, vomiting, drowsiness, coma, hypertensive retinitis, increased cerebrospinal fluid pressure and albuminuria. Three cases comprised this group, one dying during the attack. The spinal fluid pressures varied from 180 to 280 mm. water. The second group, or those without signs of cerebral edema, consisted of three patients between the ages of 40 and 65. The presenting symptoms were headache, temporary aphasia, unconsciousness, convulsive seizures, no papilledema, normal spinal fluid pressure and an inconstant albuminuria.

Horace Evans¹¹ reported seven cases among 90 acute nephritics. He made no attempt to differentiate them into groups with and without cerebral edema as was done by McAlpine. Severe headache preceded the onset in every case. There was anemia of mild degree in all. Coma varied from slight stupor to marked insensibility. Vomiting occurred in seven; convulsions in six. Ophthalmoscopic examination revealed hypertensive neuroretinopathy in four. In few the renal function tests disclosed some impairment, the blood urea varying from 30 mg. to 87 mg. The cerebrospinal fluid pressure was increased in seven.

The diagnosis of hypertensive encephalopathy occasionally presents some difficulty and frequently is made only after excluding all other

possible lesions. After a thorough consideration of clinical, laboratory and pathological features, little doubt remained that the nine cases included in this report had suffered from a hypertensive cerebral attack.

The relative absence of nitrogen retention and the high urine specific gravity indicated that true uremia could not have been the cause of death. The duration of the attack was much too short for that usually occurring in uremia. These cases have often been termed "acute uremia" in the past but the inability to demonstrate marked renal impairment makes such a diagnosis untenable and the term is misleading. The kidney changes of these cases were those usually found in "essential" hypertension, a condition that terminates in cardiac failure or cerebral hemorrhage much more frequently than in uremia.

Various intracranial lesions may simulate attacks of hypertensive encephalopathy. Cerebral hemorrhage or thrombosis often produces a similar clinical picture. The manifestations of hypertensive encephalopathy are of a very transient nature, seldom lasting over a period of a few days, while those of cerebral hemorrhage or thrombosis are of longer duration and usually leave residual signs. Physical examination in these patients failed to reveal any localizing signs suggesting hemorrhage into the brain. Anatomical examination did not disclose any gross or histological evidence of hemorrhagic or thrombotic processes.

Subarachnoid hemorrhage was readily eliminated by the clear spinal fluid. The sudden onset, high blood pressure, urinary changes and the absence of localizing signs suggested that the episode was not due to a cerebral neoplasm. This deduction was confirmed at autopsy in the cases dying during the attack.

It would be difficult to attribute the features of the attack to any cardiac or pulmonary lesion. The heart was enlarged in all cases but markedly in only one. The only anatomical findings in the five hearts examined were those usually accompanying severe hypertension. Pneumonia, pulmonary infarct or edema were easily excluded by the appearance of the patients and observations made during their physical examination and course before death. At necropsy several small bronchopneumonic areas were noted but

these were not greater than usually found in patients dying after many hours of stupor. No other pulmonary lesions were noted.

The treatment of the hypertensive cerebral attack is of great importance and the episode should be considered as an emergency. It is often possible to prevent the convulsive and comatose stages if the prodromal symptoms are recognized and proper treatment given immediately. Since the attacks are due to a cerebral circulatory disturbance, all therapy should be directed toward its correction.

The measures most successful in combating cerebral edema are venesection, lumbar puncture and hypertonic fluids. These measures were used in most of the cases observed. In one patient having generalized convulsions, a venesection of 100 cc. was followed by 20 cc. of 50% glucose intravenously and 5 cc. of 25% magnesium sulphate intramuscularly. No further convulsive seizures occurred.

In the usual case approximately 500 cc. of blood should be removed rapidly. Evans¹¹ suggests 400 cc. for the child with acute nephritis and 600 cc. for the adult. In those cases with anemia it may be unwise to do a venesection. This was thought to be true in one patient in this series who had been suffering from a menorrhagia.

The severe headache and other symptoms as well as convulsions accompanying the attack are often relieved by lumbar puncture. Most writers recommend its use but a few fear the formation of a medullary cone after removal of fluid from a patient having an edematous brain. The fluid should be removed slowly. It is well to determine the exact pressure during the procedure, removing no fluid after the pressure has returned to normal levels.

Hypertonic glucose and magnesium sulphate are the fluids most often used in an attempt to reduce the cerebral edema. Approximately 20 to 50 cc. of 50% glucose is given intravenously. Magnesium sulphate may be administered intravenously, intramuscularly, or rectally. After stupor or convulsions have appeared the two former methods are most frequently used. In adults the usual amount is 20 cc. of 10% solution. This should be injected very slowly. Fifteen cc. of 20% solution is often injected intramuscularly.

When given rectally 30 to 90 cc. of 50% solution is injected every four hours.

Morphine is often a very helpful drug and one patient in this series was quieted soon after its administration. Other drugs have been used, the majority of these belonging to the sedative and vasodilator groups. Several writers have suggested the use of erythrol tetranitrate or amyl nitrite. These were not used in any of the cases reported in this paper. Fishberg¹² states that he has never seen any good results following the use of amyl nitrite and nitroglycerine in hypertensive encephalopathy. Paraldehyde and chloral hydrate have been advocated in the past.

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TABLE 1

Case	Age	Sex	Prodromal Period	Convulsions	Temp.	Duration Hours	Fundi	B.P.
1 BH	48	M	Drowsy	Yes	98	36	ASR	220/130
2 BH	42	F	Nausea Vomiting	No	101.3	72	HNR	220/130
3 BH	51	F	Headache	No	101	24	RAS	190/112
4 BH	58	M	No Nausea Vomiting	Yes	100.4	48	ASR	220/140
1 PBBH	55	M	Headache	Twitchings	103	96	RAS	178/120
2 PBBH	49	M	No	No	?	0	HNR	220/140
3 PBBH	55	M	Headache Vomiting	Twitchings	103	72	HNR	214/150
4 PBBH	37	F	Confusion	No	104	100	HNR	220/120
5 PBBH	49	F	Vomiting	Twitchings	100	36	HNR	270/140

ASR—Arteriosclerotic retinopathy.

HNR—Hypertensive neuroretinopathy.

RAS—Retinal arteriolar sclerosis.

TABLE 2

Case	NPN or Urea N	PSP	SP. GR.	Albu. min	RBC	WBC	L. P. Pressure
1 BH	38 (NPN)	—	1.010	T	4.7	10,000	No Pres. Rdg.
2 BH	38 (NPN)	55	1.024	T	2.3	11,500	180
3 BH	33 (NPN)	—	1.008	VFT	4.9	10,200	—
4 BH	45 (NPN)	—	1.020	T	5.1	12,600	—
1 PBBH	15 (UN)	40	1.022	VFT	4.1	11,400	130
2 PBBH	.....	75	1.022	T	4.9	9,000	230
3 PBBH	35 (UN)	—	1.020	ST	4.7	13,500	Neg. Fluid
4 PBBH	28 (UN)	15	1.020	T	3.9	13,000	550
5 PBBH	23 (UN)	—	1.017	LT	4.7	24,600	230

VFT—Very faint trace of albumin.

ST—Slight trace of albumin.

T—Trace of albumin.

LT—Large trace of albumin.

PSP—Two hour phenolsulphonphthalein excretion.

TABLE 3

Case	Brain		Cerebral		Heart	
	Wt. (Gms.)	Cerebral Edema	Arteriolar Sclerosis	Wt. (Gms.)	Kidney Wt. Right Left	
PBBH 1	1520	Moderate	Moderate	590	110 110	
PBBH 2	1400	Marked	Moderate	450	170 170	
PBBH 3	1640	Marked	Moderate	420	125 140	
PBBH 4	1300	None	Moderate	520	40 170	
PBBH 5	?	Moderate	Marked	775	110 155	

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THE SURGICAL MANAGEMENT OF PERIPHERAL VASCULAR DISEASES

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From the remarks of those who have preceded me in this symposium, it is evident that diseases of the peripheral vascular system are of far-reaching significance, affecting all parts of the body and embracing all of the fields in medicine. The aspects of the problem vary in the different medical departments. The surgeon is concerned

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principally, though not exclusively, with disturbances in circulation of the extremities, and deals with diseases of the veins as well as with those of the arteries. Inasmuch as the former are responsible for more widespread morbidity, and at least as frequent mortality as the latter, diseases of both of these components of the circulatory system will be briefly presented in this discussion.

Diseases of the Veins. Diseases of the peripheral veins occur predominantly in the lower extremities, and may be grouped in the simple classification shown in the accompanying table.

TABLE 1. DISEASES OF THE VEINS

- I. Non-inflammatory Conditions
 1. Varicose Veins
 2. Abnormal Arteriovenous Communications
 - A. Congenital
 - B. Acquired
- II. Vein Thromboses and Inflammations
 1. Phlebitis of varicose veins
 - A. Ascending type
 - B. Localized form
 2. Phlebitis of non-varicose superficial veins
 - A. Ascending
 - B. Localized
 - C. Phlebitis Migrans
 - D. Phlebitis of Buerger's Disease
 3. Deep vein thromboses and inflammations
 - A. Suppurative iliac thrombophlebitis
 - B. Non-suppurative thrombophlebitis (Phlegmasia alba dolens)
 - C. Bland thromboses

Varicose veins have received sufficient attention in the recent literature to require little additional comment. Suffice it to say that the modern management, consisting of high ligation and sclerosing injection, has found almost universal acceptance, and many of the earlier divergences of opinion have been reconciled. The only change in our approach to the varicose vein problem during the past few years has been a strengthening of our convictions as to the indispensability of saphenous trunk ligations in cases in which the parent vessel is involved. We are doing saphenous vein ligations in an increasingly higher percentage of our cases, and are more and more convinced of the necessity of placing the ligature above the uppermost tributary, as near as possible to the confluence of the saphenous with the femoral vein. To further prevent restoration of continuity following ligation, we are now injecting sclerosing agents into the peripheral segment at the time of ligation, in order to obliterate the most proximal portion of the vessel. As to the choice of sclerosing agent, the solutions of soaps of the fatty acids, of which

sodium morrhuate is the prototype, have most closely approximated the ideal, and are finding the widest application. Abnormal arteriovenous communications are relatively uncommon. They may be congenital or traumatic and their treatment is surgical.

The inflammations of the veins of the lower extremities may be divided into the three subgroups shown in the table, as was first suggested by Homans.¹ Because of the stasis, anoxemia and degenerative changes to which they are exposed, varicose veins become infected far more frequently than do normal superficial veins. Most patients with varicose veins of any material degree eventually suffer from inflammation of their varices. We have repeatedly expressed the view² that all of the complications of varicose veins are inflammatory in origin; that a direct sequence of events can be traced from the varicophlebitis to the end-stages of eczema and ulceration; and that this tendency toward inflammation constitutes the greatest indication for the early eradication of varicose veins. Treatment for this type of phlebitis, as well as for its sequelae, is almost invariably ambulant, and consists essentially of supportive bandaging, preferably with Unna's paste boots, followed by active obliteration of the varicosities. We consider the presence of active phlebitis a contraindication to ligation or injection, and advise an adequate period of waiting after the complete subsidence of the inflammatory manifestations before instituting such therapeutic measures.

Non-varicose superficial veins may also be the seat of phlebitis which closely resembles that described above, both in its clinical manifestations and in its sequelae. It occurs, however, much less frequently, and is particularly prone to develop in limbs which have previously harbored deep vein infections. Treatment is as described above, although periodic recurrences may necessitate supervision and attention for the rest of the patient's life. Special forms of superficial vein phlebitis are described as phlebitis migrans and the phlebitis of Buerger's disease. The latter will be discussed under the heading of arterial disease.

The most serious vein diseases of the lower extremity are those affecting the deep veins. These may be subdivided into suppurative, non-suppurative and bland vein occlusions. Suppura-

tive inflammation of the iliac and femoral veins may follow septic abortion or delivery, and is characterized by intense sepsis and toxemia which completely overshadow any local circulatory disturbances, and which usually lead to early death from multiple septic emboli and pyemia. Treatment is heroic and rarely effective.

Non-suppurative thrombophlebitis of the deep veins is the ordinary postoperative or puerperal form which has long been termed phlegmasia alba dolens, and is characterized by a febrile course and edema of the extremity. The edema may disappear, or may persist indefinitely. These patients, as mentioned, are also subject to repeated attacks of superficial vein phlebitis, with their sequelae of indurations, eczemas and ulcers, and which may eventually progress to the development of a true elephantiasis. Treatment during the acute stage is directed toward the early mobilization of the edema fluid by means of elevation, diuretics and x-ray. Subsequent care consists in supportive bandaging and constant care and supervision, as indicated above, for the recurring superficial inflammatory phenomena.

Bland thromboses occur after operation or delivery, produce no symptoms by which their presence can be recognized, and give rise to the massive pulmonary emboli which are so often rapidly fatal. Since their presence cannot, as a rule, be detected, treatment is not indicated before embolism occurs, and is too late after the embolus has struck. Prophylaxis is of fundamental importance, and is directed toward avoiding slowing of the circulation and fall in blood pressure by exercise, stimulants and early mobilization of surgical patients.

Diseases of the Peripheral Arteries. Patients presenting themselves for treatment because of peripheral arterial disease comprise, essentially, three groups which are, in order of their frequency, arteriosclerosis, thromboangiitis obliterans, and the vasospastic lesions which are usually grouped under the name of Raynaud's disease. Arteriosclerosis is essentially an organic process, unattended by marked vascular spasm except in the acute embolic or thrombotic occlusions. In the early stages of Buerger's disease, occlusive and spastic features are co-existent; later, the changes are entirely organic. Raynaud's disease is primarily a functional dis-

turbance, although in the terminal stages, when trophic disorders or scleroderma supervene, actual vascular tissue changes can be demonstrated. In the selection of therapeutic measures for the various stages of these disorders it is necessary to keep in mind the nature of the disturbance and the objectives toward which treatment is directed. Modern management, in general, stresses early recognition and conservative treatment, and is effective in saving many limbs which, in former years, would have been needlessly sacrificed.

Arteriosclerosis. Arteriosclerosis of the peripheral arteries is a degenerative disease of advancing age, characterized by diffuse narrowing and inelasticity of the vessels, resulting in ischemia, which affects chiefly the lower extremities. The process progresses slowly, although sudden thrombotic occlusions may be induced by trauma, exposure or infection. Collateral vascular channels are sparse because of the diffuseness of the lesion and the impaired reparative powers of these aging patients. The slow progression of the disease permits adaptation of the tissues to the diminished arterial inflow, and the fact that the patients are beyond the age of greatest activity makes it easier for them to limit their circulatory needs to the capacity of their vessels. If they can be tided over the crises of acute ischemia, severe pain, trophic ulceration, infection and impending or beginning gangrene, circulatory balance may again be restored. If not, spreading infection or massive gangrene may leave no alternative to amputation.

Since this is a degenerative disease, closely allied to the growing-old process, causal therapy is out of the question. Early recognition, however, and education of the patient to avoid exposure, trauma and infection are of primary importance. Exposure to cold is particularly dangerous. Cold baths should be interdicted. During winter months, soft woolen hose, wool-lined shoes, and warm bed socks should be worn. Ill-fitting shoes causing pressure or trauma should be avoided. Ill-advised or carelessly performed minor surgical operations such as trimming of calluses or corns, removal of toe nails, or application of irritating medicaments must be studiously shunned. The skin of the feet should be carefully bathed daily, dried gently, and anointed with lanolin to prevent scaling

and cracking. Concomitant ringworm infection, if present, should receive appropriate treatment. These measures are of utmost importance in preventing infection and gangrene, and constitute the first requirement in the management of all forms of arterial disease of the extremities.

Further measures, during the uncomplicated stages, are directed toward limiting activity and improving the circulation. Rest is essential. Smoking should be prohibited because of its tendency to produce peripheral vasoconstriction. Heat is of value in producing passive dilatation of the vessels. An incandescent bulb-heated cradle or baker may be used, if adequate precautions against burning are taken. Diathermy to the legs is also effective. Vascular exercises, as devised by Buerger and Allen should be insisted upon. Vasodilators such as theobromine sodium salicylate, in doses of 30 to 40 grains daily, are given. With these simple measures, the circulation can be improved sufficiently to relieve symptoms and increase the range of activity in the majority of patients.

In the occasional case in which the measures described are inadequate, and those in which infection, ulceration or beginning gangrene are present, more intensive treatment is required. Bed-rest is essential. Hot boric compresses or Dakinization of the infection may be necessary. Intravenous hypertonic salt solution, 3 to 5%, in quantities increasing from 150 to 300 cc. often aids materially. Alternate positive and negative pressure, if suitable apparatus is available, affords a genuine advance in the handling of this type of patient. Treatments should be given once or twice daily, for a minimum period of one hour each. If pain is severe, and particularly, if it interferes with adequate dressing and care of open lesions, peripheral nerve block, as recommended by Smithwick and White³ is a useful adjunct. This has the further advantage of promoting maximal vasodilatation in the area supplied by the injected nerve. Localized gangrene is allowed to demarcate, and the affected tissues are removed. More extensive gangrene calls for major amputation, at the site of election or through the knee. Spreading cellulitis or lymphangitis necessitates thigh amputation of the guillotine type.

Diabetes. When complicated by diabetes, the picture differs from banal arteriosclerosis in sev-

eral important characteristics. The general health of such patients is poorer; there is more advanced cardiac and cerebral vascular damage, as a rule; and they have a notorious predisposition to rapidly spreading infections. Treatment must be earlier and more intensive. The control of the diabetes is imperative. Ascending lymphangitis or cellulitis call for early and radical amputation, or death from sepsis may supervene.

Thromboangiitis obliterans. Thromboangiitis obliterans is an inflammatory disease of unknown etiology, occurring in young males between the ages of 20 and 45, and affecting the larger arteries and veins of the extremities. The legs are more often affected than the arms, and, occasionally, visceral vessels may be involved. The essential lesion is an obliterative endarteritis, upon which is superimposed thrombotic occlusion. Its distribution is patchy and irregular; the remaining vessels retain their distensibility. This capacity for dilating, often loosely spoken of as spasm, is lost later in the course of the disease. Because of the youth of the patients and the distensibility of the uninvolved vessels, exuberant development of collateral arterial channels is the rule. The disease is usually self-limited, and if the growth of collateral circulation can be made to keep pace with occlusive processes and the patient tided over periods of acute ischemia, ultimate recovery with useful limbs should be the rule.

The cause of the disease is unknown. Causal therapy, therefore, except for the eradication of infectious foci and the use of foreign proteins, is not feasible. Tobacco is at least an important aggravating factor and complete cessation of its use is a sine qua non to successful treatment. The general prophylactic and hygienic measures described for arteriosclerosis are equally important in Buerger's disease, and in the stage of intermittent claudication may be sufficient. The selection of further treatment depends upon the distensibility of the uninvolved vessels, or the vasospastic component present. If a material degree of spasm is present, fever therapy is an effective measure. We use intravenous injections of typhoid vaccine, starting with doses of 15 to 25 million, and increasing until an adequate febrile reaction is obtained. If the vasomotor component is low, hypertonic salt solution

injections are used, as described above. This more or less empiric form of therapy is credited with excellent results in some of the largest series of cases reported^{4, 5} and in our hands, has been very useful.

When rest pain and trophic lesions are present, recumbent treatment is essential. Opiates must be avoided because their prolonged administration readily induces addiction. The simple expedient of finding the angle of maximal circulatory efficiency and maintaining the patient in that position, often suffices to overcome severe and demoralizing nocturnal pain. Alternating positive and negative pressure may be used, although we have found it of less value in Buerger's disease than in arteriosclerosis. Sensory nerve block or section will relieve the agonizing distress, facilitate care of the open lesions and promote healing. Amputation should not be done because of pain. Localized areas of gangrene should be treated conservatively until demarcation occurs. Major amputation is justified only in cases of massive gangrene, spreading infection, or if tissue destruction is too extensive to leave a useful member. This recognition of defeat should be necessary in not more than 5 to 10% of cases.

The role of sympathetic ganglionectomy in the treatment of thromboangiitis obliterans is still undecided. Its usefulness is limited to the early cases, in which a high vasospastic component is present. In this stage, the conservative measures are also effective. In the few instances in which we have used this procedure, the results have been satisfactory, but we do not as yet give to this form of management more than a minor place in the therapy of thromboangiitis obliterans.

Raynaud's Disease. A series of vascular disorders of the extremities in which vasospasm constitutes the principal disturbance is grouped under the name of Raynaud's disease. This affection more often involves the upper extremities, is frequently symmetrical, and characteristically occurs in young women. At first, there are attacks of anemia, cyanosis, and numbness of the affected regions on exposure to cold or accompanying emotional disturbances. Later, ischemia may be continuous and trophic changes of a relatively mild degree occur. At this stage, organic changes have usually developed on the

basis of the functional derangement. Ultimately, scleroderma of the exposed parts of the body may supervene.

Many of the Raynaud's syndromes are secondary to other organic disturbances and respond to removal of the causative factor. In uncomplicated cases, avoidance of exposure, administration of bromides and mild fever treatment give relief. This group of patients responds most favorably following cervicodorsal or lumbar sympathetic ganglionectomy. Although the spastic reflex is local rather than central in origin, (Lewis), and in spite of the fact that the late results are imperfect, this form of therapy has, in general, been found gratifying. In the late stages complicated by scleroderma, the changes are usually irreversible, but further progression of the disease may be prevented by the attack on the sympathetic ganglia.

Summary. Peripheral circulatory disturbances may be of venous as well as of arterial origin. Vein diseases include varicosities, abnormal arteriovenous communications, and the various types of phlebitis and thrombosis. Varicose veins are particularly susceptible to the development of phlebitis, which may be the precursor to the late complications, eczema, ulceration and elephantiasis. Massive embolism is not a frequent sequel. Treatment consists of support by means of Unna's paste boots, followed by ligation and injection of the veins. Non-varicose superficial veins are less often affected. They become inflamed commonly, as a sequel to deep vein thrombophlebitis. Migrating phlebitis of the superficial veins is part of the picture of Buerger's disease. The deep veins may be the seat of suppurative phlebitis, with early sepsis, pyemia and death; of postoperative or puerperal thrombophlebitis, with its sequelae of persisting edema, attacks of superficial phlebitis, and obstinate ulceration; and mild, bland thromboses, the presence of which is first announced by sudden massive, and often fatal, pulmonary embolism.

The common arterial lesions are arteriosclerosis, with or without diabetes, thromboangiitis obliterans and Raynaud's disease. Treatment is essentially conservative, and consists of general prophylactic and hygienic measures, rest with graded vascular exercise, and the avoidance of tobacco. Heat and diathermy are of value. If

material vasospasm accompanies the lesion, foreign protein therapy aids materially in the establishment of collateral circulation. In the absence of a spastic component, intravenous hypertonic salt solution injections improve the circulation and promote healing of open lesions. Alternating positive and negative pressure often tides the patient over acute crises of ischemia, until circulatory balance is restored. Severe pain can be relieved by blocking the peripheral sensory nerves, and should not constitute an indication for major amputation. Localized areas of gangrene are allowed to separate spontaneously. Major amputation may become necessary because of massive gangrene or spreading infection. In the presence of diabetes, early radical amputation may be necessary to prevent septic death.

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DISCUSSION ON SYMPOSIUM ON VASCULAR DISEASES

Dr. Ford K. Hick, Chicago: My discussion will be confined to certain aspects of treatment. I know of no field in which attention to detail is so well rewarded as in the management of cardiac and circulatory disturbances. Every patient differs from the rest; rules are of little value.

In Dr. Bell's paper I was impressed by the word tranquillity as constituting part of the treatment. Many of these hypertensive patients insist upon knowing the blood pressure, though they are unable to evaluate its importance and are scared to death of cerebral accidents, sudden death and what not. I saw a patient who was called upon to act as pallbearer for a friend who had died suddenly. About two o'clock the day of the funeral he developed his first coronary occlusion; his blood pressure had risen from a safe level to 265 systolic, 145 diastolic at the time of the attack. I tell many of these patients to pay no attention to their arterial tension, and occasionally tell them of some of

the patients in the clinic who have survived extreme hypertension featured by cerebral and coronary accidents for many years and are still alive.

With reference to Dr. Scupham's paper, in the University of Illinois I examine some of Dr. deTakaf's clinic patients to find out what else they have besides the circulatory disease. I have not seen a case in that group with a hemoglobin above 75%. Most of them are suffering from malnutrition, many have been in pain for months and have lost sleep from that cause. The management of these problems is important. In the management of diabetic gangrene, the attitude of my chief, Dr. Keeton, is conservative. One of the stunts he likes to use is bed rest, with the foot encased in an air-conditioned chamber. The patient lies in bed with both feet under a wooden box, with the temperature around 100° F. without direct exposure to light bulbs. It seems to be a signal aid in helping these patients combat minor infections at the site of gangrene.

I appreciate particularly also the attitude expressed by Dr. Zimmerman—universal conservatism, uniform emphasis on things to do for the patient outside his arterial situation. I think that attitude on the part of the surgeon is advanced over the practice of ten years ago.

Dr. C. B. Ripley, Galesburg: I feel that the papers of this symposium are the most valuable I have heard for a long time. I hope that those who are here will watch for the publication of Dr. Zimmerman's paper which he did not have time to finish. His talk on the general condition and general handling of the patient was of utmost importance.

I want to mention two or three things only.

One is the work on varicose veins being done so largely today. I am glad to see that he favors the high ligation of such veins, before injection, to avoid the danger of emboli.

Another! We have, as you all know, infective emboli in showers, which occur frequently and may not cause any trouble. But the really dangerous thrombi are those so-called benign, mild or aseptic affairs, not closely attached to the vessel walls, which may be easily dislodged. It is those that cause shock and sometimes immediate death.

As surgeons and general practitioners we are most interested in postoperative vein complications occurring more and more frequently following clean operations. The French and Germans report a great increase in such occurrences. There has been a lot of argument about why they occur, and especially over why they most always occur on the left side, although the operations, as you know, are mostly on the right side of the abdominal cavity.

I think that interference with circulation, rest in bed, and tight bandaging are generally recognized as very important causative factors in these conditions. The blood volume is down because of hemorrhage and restricted intake of fluids and loss of fluids. The bleeding and coagulation times often are found to be shortened. This may not be of immediate importance but it should be remembered. The long latent period of ten

days average after operation before thrombi occur is a favorite argument of the surgeon against their having any connection with the operative work.

There has been much published in the last ten years about these pulmonary emboli and operations to save lives. If there are showers of small emboli they most all get well and surgery has no place in the treatment. But there has been a lot published about the Trendelenburg operation for massive emboli and the clinics in the large hospitals seem to feel that the house surgeon is responsible for a death from pulmonary embolus if he fails to recognize the condition and misses the chance to operate. In these cases that do survive such surgery, it is a question whether conservative treatment would not have been as successful. The most constructive thing we can do is to try to prevent such things occurring. I think we should avoid constricting bandages, and we should use carbon dioxide more frequently to stimulate deeper breathing immediately following such surgery as laparotomy. Ten days or twelve days in bed is too long. We should arrange early mobilization of our surgical patients, even within two or three days after laparotomy. Or if the patient is too debilitated for that, the bed exercises should be used as described by Dr. Zimmerman.

Dr. George Woodruff, Joliet: I have not had the opportunity of reading the various papers presented. My remarks are based on the short abstracts in the journal, with additional thoughts which appear pertinent to the subject. The subject is extremely broad and deep, with rather indefinite limits, and I do not hope to have my discussion complete or scientific.

Some of the commoner conditions about the nose, throat or ear in which vascular disease may be a factor, either etiologically or as a complication, are nasal hemorrhage and congestion, vertigo, tinnitus and deafness in the vestibulo-auditory apparatus, hemorrhage in the pharynx and paresis or paralysis in the larynx. In the eye there are several serious manifestations of vascular diseases, which will be touched on later.

I have seen sudden severe nasal hemorrhage in a middle-aged woman come on without previous bleeding. When I arrived the patient was unconscious on the floor. Luckily the hemorrhage had stopped, and has not recurred in the past five years. Undoubtedly many nasal hemorrhages are partially due to vascular abnormalities—weakened vessel walls, often associated with increased pressure in such a vessel. Of course we recognize that the common nose bleed from Kieselbach's area at the anterior and lower part of the septum, is due mostly to purely local conditions, but there is a large group of cases in which vascular disease is an important factor. In some of the cases the nose bleed may represent a more serious vascular lesion. I believe that some headaches which patients ascribe to sinusitis are due to that mysterious condition called hypertension and possibly to other vascular diseases. Congestion of the nasal mucosa and perhaps even polypi, I think in some cases are due to vascular disease.

Dr. Shapiro has covered the field with regard to vascular disturbances affecting the two important functions of the ear. He has pointed out that in diagnosis,

chronic ear infection and brain tumors as well as toxemia should not be overlooked. It occurs to me that trauma at times may also confuse the picture. Recently I saw such a case in which tinnitus and deafness with recurring attacks of vertigo followed the explosion of a firecracker near the patient's ear. As time went on, the case at different times seemed to be in part based on trauma, tubal catarrh and toxemia, and a vascular factor was a possibility. He finally recovered following treatment to a diseased ethmoid and tonsillectomy, followed by the use of an autogenous vaccine. In some cases there may be more than one cause at work. To a considerable extent our treatment of these cases must still be empiric. Dr. Shapiro and others doing similar work will gradually give us a more scientific basis for therapy.

In these cases the question of prevention looms large. I believe in persons of middle age the sudden attack of vertigo often occurring during the night, or manifest on arising in the morning, followed by what the patient calls a feeling of dizziness with attacks of vertigo tapering off to a gradual return to normal or nearly normal feeling in several weeks, is a warning which should not be ignored. The vascular system should be thoroughly tested out and put under the proper control, living and eating habits must be regulated and sources of toxemia eliminated. Of course these cases, if possible, should have a thorough examination of the vestibular apparatus and the hearing also, and in some cases this should be done repeatedly.

The effects of vascular disease are not uncommonly seen in the larynx. An abductor paralysis of the larynx on the left side is most often due to aneurysm of the aorta. In some patients past middle age the state of the vascular apparatus is very important when the question of tonsillectomy is under discussion. It may at times be an indication for fractional electrocoagulation rather than the usual surgical tonsillectomy.

Dr. Chapman has gone thoroughly into the manifestations of vascular disease in the eye, and has described the serious consequences of those sudden vascular accidents such as embolism of the central retinal artery, thrombosis of the central retinal veins and retinal hemorrhage.

Of late it has been quite a frequent experience to see cases of transient painless edema of the eyelids which, for want of a better term, we call angioneurotic edema. Whether this should properly be called a vascular disease or an allergic disease I do not know. Ingestion of fair sized doses of calcium seems to be of some benefit in controlling it.

Vascular disease is of importance when ocular surgery, especially for cataract or glaucoma, is considered. Hypertension or weakened vessel walls, if not recognized and proper precautions taken, may result in expulsive choroidal hemorrhage which often means loss of the eyeball, or at best retention of the globe with very little vision.

I enjoyed Dr. Chapman's pathologic fundus pictures very much. I think they are valuable to all of us, and I think they constitute a good review of fundus pathology.

Dr. M. H. Barker, Chicago: The subject has been very well presented in this symposium with regard to bringing out some serious clinical complications met in the hypertensive group. So much material is appearing in the scientific and lay press on this problem that the public is getting interested in the subject and physicians are demanded as never before to be well acquainted with true advances in the treatment of hypertension.

In this great group of vascular cases called hypertension, we have all seen crises that were only temporary, and those with thromboses, hemorrhage and coronary occlusions or acute heart failure (dilatations) that cause death, either at the time or were attended with prolonged disability and suffering. These emphasize the importance of elevated tension, so that anything that we can do to avoid or reduce elevated blood pressure is important. In the last few years we have been working with the gradual reduction of pressure in various age groups, as reported in the *Journal A. M. A.* this spring, and we have a definite feeling in our clinic that dropping the blood pressure is attended with no serious danger, if done gradually. Certainly, watching these patients over months or years will show them to go through periods of several weeks or months during which time their blood pressure will run at much higher levels. Given a hypertensive running 160-200 much of the time; observations at regular intervals often show at some period during the year a gradual increase to levels of 230-270 mm. which are classed as "vascular crisis." It is during these periods that they are in greatest danger. Various observations give us no reason for these exacerbations. Certainly during these periods of ascent we find the blood serum proteins increased in a great percentage of cases. The uric acid and phenols tend to pile up. If the process is reversed either by the natural course of events or by therapeutic means there is a relief of the symptoms and a descent from their state of vascular crisis is associated. In addition to relief of symptoms, as the blood pressure drops, edema of the eye grounds decreases, hearts quiet down and compensation returns, the urinary picture improves and renal function tests improve. So we are firmly of the opinion that dropping the pressure by whatever means, as long as it is very slowly done, is a distinct step desired for the patients' security. No doubt the future will bring out the points of difference between the different types of hypertension as in fever, and these assaults on our vascular structure will be understood and relieved. Certainly, close clinical and laboratory study are now throwing much practical light upon this problem.

Dr. C. Elliott Bell, Decatur: Dr. Barker observed that when the blood pressure in hypertensive heart disease was progressively increasing, treatment to lower the blood pressure should be used energetically and at once. It seems to me that this procedure entails certain dangers. I have recently observed two cases which ended tragically following the use of vasodilators which produced a sudden fall in arterial tension.

Dr. S. L. Shapiro, Chicago: I have probably obtained much more than I gave. Men who are

specialists, even those who work in the universities, often do not have an opportunity to get the big picture, the entire picture, as do physicians who are doing general work, although we strive to do so. I was greatly benefited in listening to these other papers.

Dr. Leo Zimmerman, Chicago: I want to express my thanks to Dr. Ripley for emphasizing the venous side of this picture. I consider it a highly important but sadly neglected phase of the problem which merits all our attention.

ATHEROSCLEROSIS

Its Incidence and Some of Its Results in One Thousand Consecutive Necropsies

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Although, from the studies of mummies, atherosclerosis has existed at least since earliest historical times and although much has been written on the subject since the sixteenth century, E. Sydenstricker (*Arteriosclerosis*, Edited by Cowdry, the MacMillan Company, New York, 1933) concludes "that statistics of arteriosclerosis are unsatisfactory to such a degree as to warrant very limited conclusions as to the prevalence of the condition." The statistics available appear to be derived from blood pressure studies, from studies to determine the incidence of palpably sclerosed superficial arteries and from mortality statistics based on death certificates. Another possible source of information, the study of large series of necropsies, seems to have been neglected. Like the other sources of statistical information mentioned, this one is not entirely satisfactory. In routine necropsies, no mention is, as a rule, made of the presence or absence of atherosclerosis of the superficial arteries, of the arteries of the head, neck, extremities, or of the trunk except some of those within its cavities. The common carotids, common iliacs, renal, mesenteric and splenic arteries are occasionally mentioned; the aorta and coronary arteries and the results of atherosclerosis on the myocardium and kidneys usually.

A study of a vast series of records of routine necropsies will give accurate information regarding the incidence of atherosclerosis in the aorta, coronary and renal arteries. Information of value may be gained as to age of onset and the

From the Department of Pathology, Northwestern University Medical School.

average duration and extension before secondary pathology and resulting morbidity and mortality develop. In addition, more accurate information may be gained regarding the incidence of atherosclerotic scars of the myocardium and kidneys, of coronary occlusion, and of other pathological conditions resulting from atherosclerosis.

In an attempt to evaluate this approach to the problem, a study of 1000 unselected necropsy records in the Department of Pathology, Northwestern University Medical School, has been undertaken. The results of a study of only 1000 records may be of some value in determining gross incidence but the number of cases in each of the five year age groups are not sufficient to more than suggest the general trends of the incidence of these lesions in a few arteries and their effects on a few organs. It is interesting to note in this connection that the curve of incidence by age groups in this series of necropsies does not differ greatly from the curve by age groups in the Mortality Statistics, United States Department of Commerce for 1933 (Chart 1).

These necropsy records which include twenty-

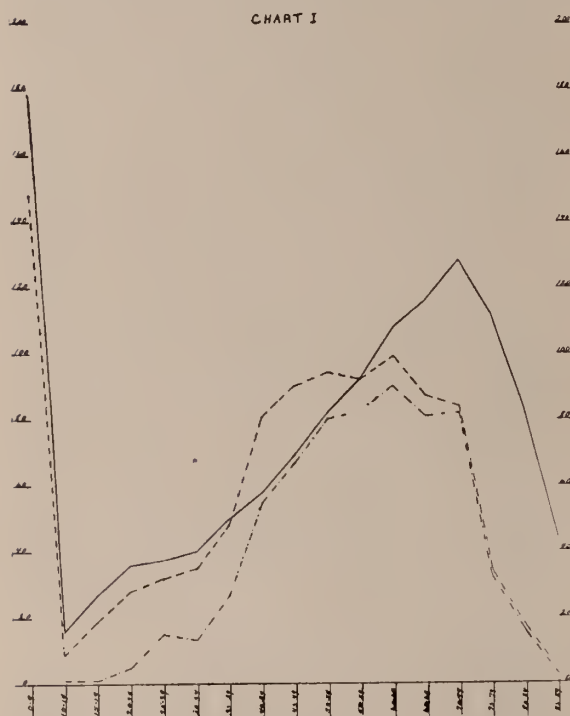


Chart 1. Number of deaths all causes, U. S. Mortality Statistics, 1933 in thousands —.

Number of deaths all causes in 1,000 necropsies

Number of cases of atherosclerosis of aorta or coronary arteries — — —

eight still births, contain proportionately fewer cases in the younger and older and more in the middle age groups than do the U. S. Mortality Statistics yet the curves do not differ radically. The number of records in the young and old groups in this series is so small that percentage figures based on them cannot be considered accurate. Yet the curve of the incidence of atherosclerosis, by age groups, is quite regular.

The incidence of atherosclerosis of the aorta and of the coronary arteries, seems to be about the same in males and females (Chart 2). There seems to be no direct relation between the percentage incidence in the various age groups (Chart 3) and that of carcinoma, syphilis, dia-

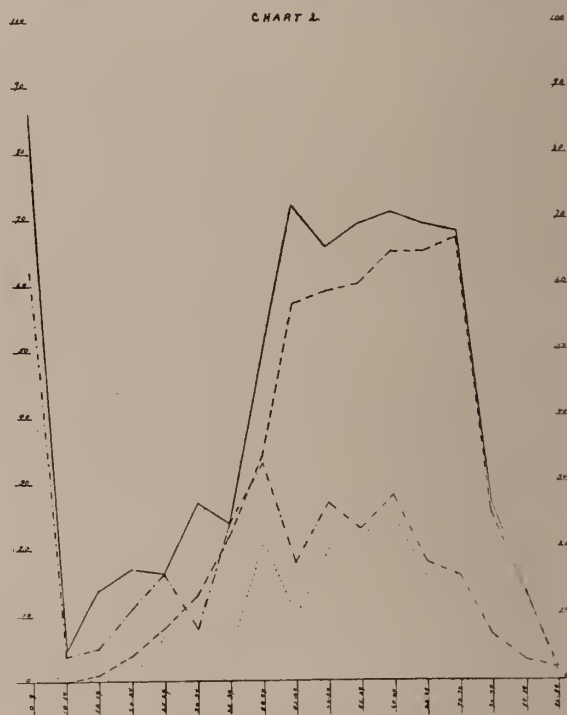


Chart 2. Number of males in 1,000 necropsies —
Number of males with atherosclerosis of aorta or coronary arteries ---
Number of females — — —
Number of females with atherosclerosis of aorta or coronary arteries - - - - -

betes or arteriosclerotic nephritis. It is, however, much more frequently found than is carcinoma which in this series of cases has an incidence almost twice that found in the U. S. Mortality Statistics cited above.

Sixty-five per cent. (Chart 4) in round numbers of all of the cases had more or less atherosclerosis. In 28% there was little atherosclero-

sis; in 16, a moderate amount; in 21 extensive. In 20%, there were calcified atherosclerotic plaques. In about 42% it was an incidental

of cases for as will be seen in subsequent charts, the percentage incidence in these groups is between 95 and 100. The curve for a moderate amount of atherosclerosis begins about ten years after that for a little and remains lower until the 65-69 age group. While there is one case with extensive atherosclerosis as young as the first with a moderate amount, this curve starts up five years after the curve for a moderate amount and crosses it between 60-64; that of a

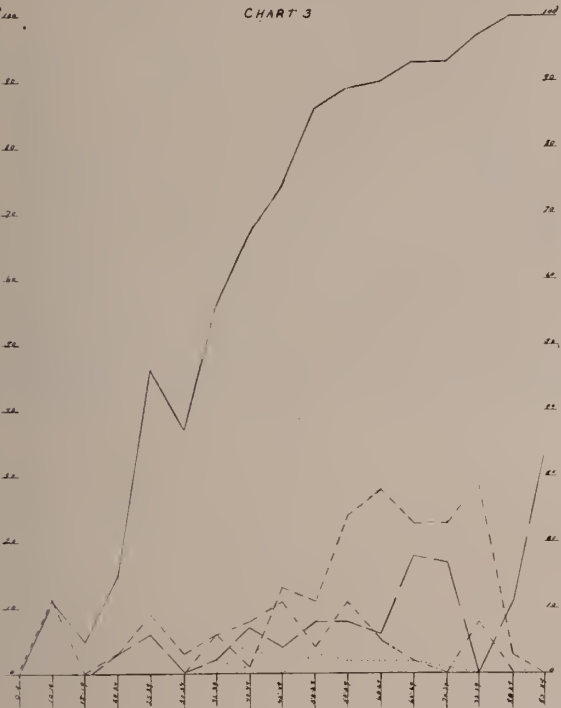


Chart 3. In 1,000 necropsies percentage incidence according to age groups with:
Atherosclerosis of aorta or coronary arteries ———
Carcinoma ———
Syphilis ———
Diabetes ———
Arteriolosclerotic nephritis ———

finding; in 14 the cause of the primary cause of death and in eight, the etiological factor in an important contributory cause of death. In Table I, are listed the causes of death in those cases in which atherosclerosis was considered as an etiological factor. When a larger series of cases has been studied, it will be interesting to determine whether it is more or less frequent in those in which cancer, diabetes, arteriolosclerotic kidneys, cholecystitis and prostatic hypertrophy or other diseases are also present. In Chart 5, the number with little atherosclerosis of the aorta or coronary arteries, with a moderate amount and with extensive atherosclerosis and the number with calcified plaques are shown by age groups. It seems that atherosclerosis has its inception during youth and begins to increase rapidly during the fourth decade. The fall in the latter decades is due to a drop in the number

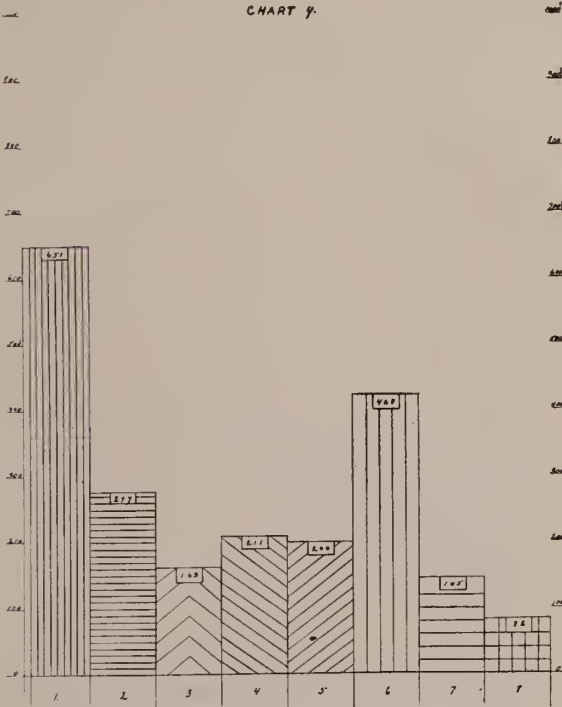


Chart 4. In 1,000 necropsies, the number with
1. Atherosclerosis of the aorta or coronary arteries 651
2. Little atherosclerosis of the aorta or coronary arteries 277
3. Moderate atherosclerosis of the aorta or coronary arteries 163
4. Extensive atherosclerosis of the aorta or coronary arteries 211
5. Atherosclerosis with calcification of aorta or coronary arteries 200
6. Atherosclerosis an incidental finding..... 424
7. Atherosclerosis the primary cause of death.... 145
8. Atherosclerosis an important contributory cause of death 82

little, between 65 and 70. The curve of the incidence of calcified atherosclerotic plaques begins five years after but follows closely that of extensive atherosclerosis, in fact rises higher in the 65-69 age group as this lesion is sometimes present even when there is but little athero-

sclerosis; when the atherosclerotic lesions are old though not so numerous.

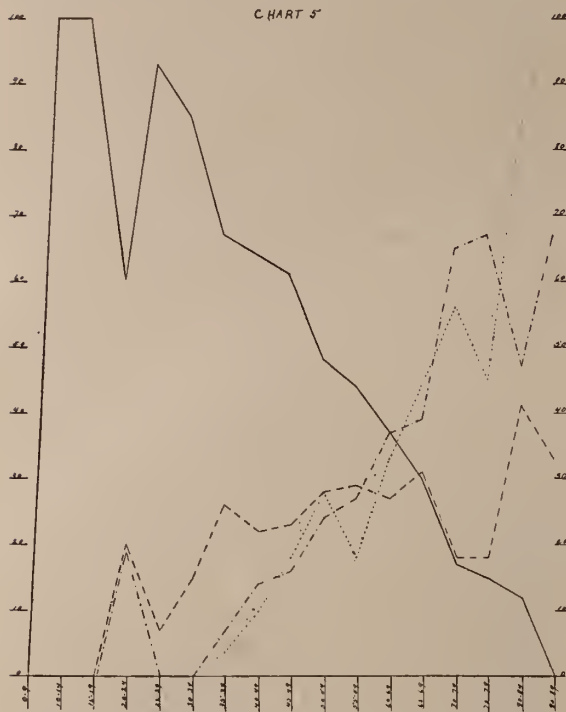


Chart 5. In 1,000 necropsies, percentage incidence according to age groups with:

Little atherosclerosis ———
A moderate amount ———
Extensive ———
Atherosclerosis with calcification ———

In Chart 6, the percentage incidence by age groups of atherosclerosis as a primary and as a contributory cause of death and the incidence of calcified atherosclerotic plaques are illustrated. Atherosclerosis seems relatively unimportant either as a primary or contributory cause of death in those age groups under 45-49 and increasingly important thereafter. The curves of atherosclerosis as a primary or contributory cause of death parallel quite closely that for calcified plaques which are, however, proportionately more common in the older groups in which there are so few cases that the percentage figures cannot be accurate.

Next are illustrated (Chart 7), the percentage incidence according to age groups of atherosclerosis of the aorta or coronary arteries, of the aorta, of the coronary, pulmonary and cerebral arteries, of atherosclerotic scars of the kidneys and myocardium. Atherosclerosis of the pulmonary arteries seems to be relatively rare; its

relation to mitral stenosis, syphilis, arteriosclerosis, etc. should be determined. Atherosclerosis of the cerebral arteries is undoubtedly much more common than it seems to be as the head was examined in relatively few cases. Atherosclerosis of the aorta appears earlier than does atherosclerosis of the coronary arteries but the incidence of lesions in the coronary arteries is about the same as in the aorta after age 60. The curves of incidence of scars in the myocardium and the kidneys ascribable to lesions in their arteries are so similar that it seems that the disease affects the coronary and renal arteries at about the same time. Furthermore it seems that atherosclerosis of the aorta exists for at least twenty years and of the coronary arteries for

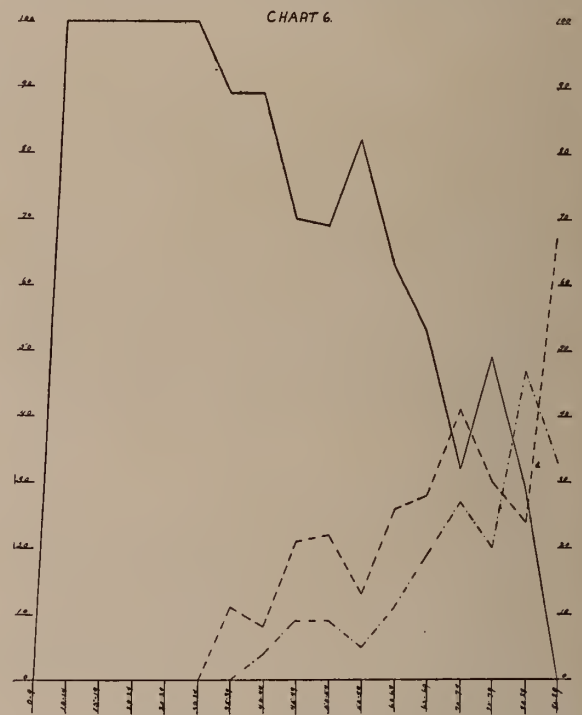


Chart 6. In 1,000 necropsies, percentage incidence by age groups of atherosclerosis:

As an incidental finding ———
As the primary cause of death ———
As a contributory cause of death ———

from ten to twenty years before the scars in the myocardium appear.

The percentage incidence of atherosclerosis of the aorta or coronary arteries, of the coronary arteries, of atherosclerotic myocardial scars, of coronary thrombosis, and of atherosclerosis as a primary cause of death is illustrated in Chart 8. Again the conformity of the curves is note-

worthy in view of the small number of cases in certain age groups. Congestive heart failure or coronary thrombosis cause a large proportion of the deaths ascribable directly to atherosclerosis. About one-half to two-thirds of such

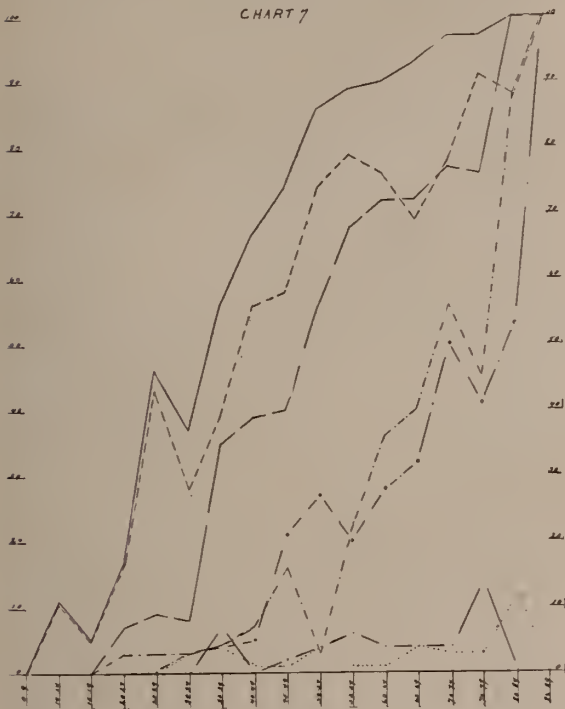


Chart 7. In 1,000 necropsies, percentage incidence by age groups of:

- Atherosclerosis of aorta or coronary arteries ———
- Atherosclerosis of aorta - - - -
- Atherosclerosis of coronary arteries - - - - -
- Atherosclerosis of pulmonary arteries -
- Atherosclerotic scars of kidneys
- Atherosclerotic fibrosis of myocardium - - - - -
- Cerebral hemorrhage and thrombosis - - - -

deaths are caused by recent or ancient cardiac infarcts.

In Chart 9, the percentage incidence is given of atherosclerosis of the aorta or coronary arteries, of atherosclerosis as an incidental finding and as the etiological factor in the primary and contributory causes of death and of carcinoma as a cause of death in those 44 and under, in those 45 and over, and in those 65 and over. Carcinoma causes more deaths in those 44 and under, atherosclerosis more in the two other groups. Each causes almost one-third of the deaths in those 65 and over but atherosclerosis is a primary or the etiological factor in the contributory cause of death in about 55% in this group.

Less is known about the incidence, cause, life history, prevention and treatment of this very common disease of the arteries than is known about carcinoma. Yet atherosclerosis and carcinoma are the primary or contributory cause of death of some 85% of the deaths in this series in those 65 and over, of some 55% of those 45 and over, of some 20% of those 44 and under. This disease of the arteries is present in the aorta

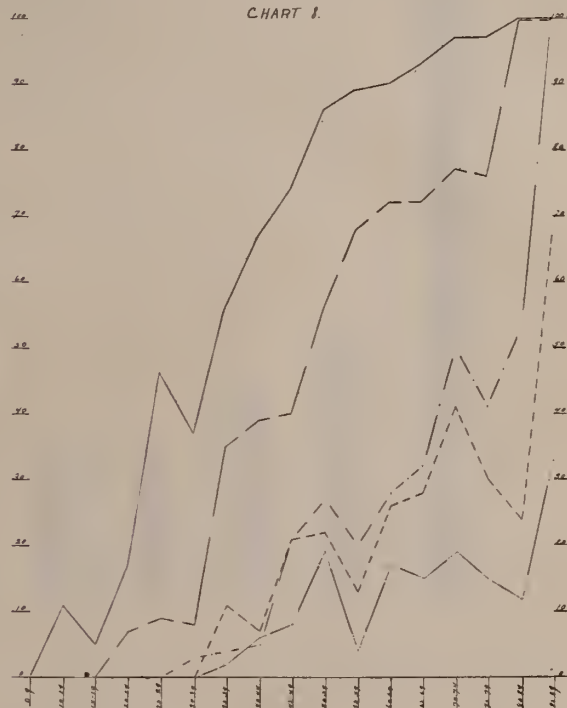


Chart 8. In 1,000 necropsies, percentage incidence by age groups of:

- Atherosclerosis of the aorta or coronary arteries ———
- Atherosclerosis of the coronary arteries - - - -
- Atherosclerosis as a primary cause of death - - - - -
- Atherosclerotic fibrosis of myocardium -
- Thrombosis of coronary arteries, ancient or recent

or coronary arteries in some 90% of those over 44 and in some 95% of those over 64 in this series. It appears early in life and is almost universal in old people. Years elapse between its onset and its appearance as the etiological in the primary and contributory causes of death.

As stated previously a series of 1000 cases is not nearly long enough to be the basis for conclusions in such a study. The close conformity of the curves presented, indicate, however, that atherosclerosis is undoubtedly the most common pathological condition in those over 35 years of age, its results the most important causes of

death in those over 45 and that it is a very chronic and slowly progressive disease.

It seems that reasonably accurate data, data more accurate than that from other sources, may be obtained from the study of large series even of routine necropsies. These figures can

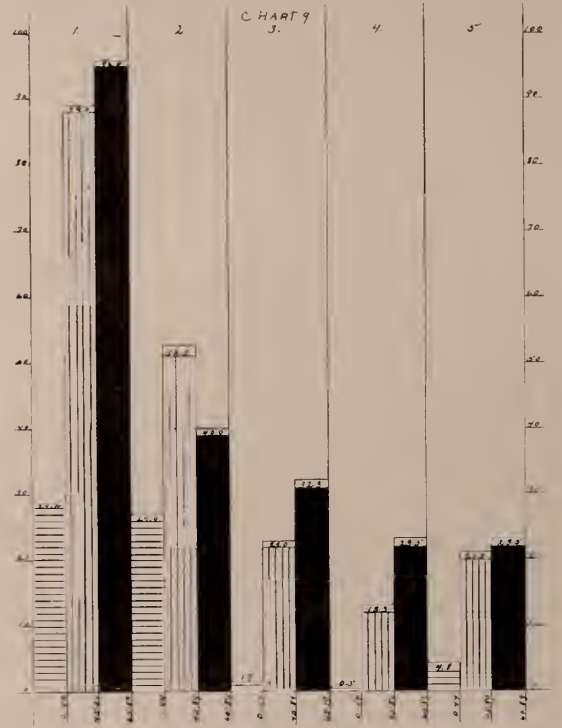


Chart 9. In 1,000 necropsies, percentage incidence in certain age groups of:

	in 400	in 600	in 225
	0-44	45-89	65-89
1. Atherosclerosis of aorta or coronary arteries	29.2	89.0	96.0
2. Atherosclerosis and incidental finding	27.0	52.5	40.0
of death	1.7	23.0	32.3
3. Atherosclerosis, the primary cause			
4. Atherosclerosis, a contributory cause	0.5	13.3	23.5
5. Cancer, the cause of death.....	4.85	21.3	23.5

be made more accurate if pathologists who perform many necropsies will systematically note the presence or absence of this disease in the larger arteries of the neck, extremities, thoracic and abdominal viscera, and of the superficial vessels and its relation if any to the cause of death. Studies to determine the types of atherosclerosis described by Leary (J. A. M. A. 105: 475, 1935), and the age of the lesions should be included. Very complete clinical rec-

ords would, of course, add greatly to the value of such studies.

It seems then that while animal experimentation in connection with the etiology and treatment of atherosclerosis should not be neglected indeed should be fostered, there is much that can be learned about this disease from the careful study of routine necropsies; more from the study of large series in which the condition of as many arteries as possible is specifically noted; more if the cases have been carefully studied clinically. However, until methods are devised for the early diagnosis of atherosclerosis of such arteries as the aorta and coronary, or until it is shown that, clinically detectable lesions occur, for example, in the radial arteries as early, more can be learned about the onset and much of the course of the disease by studying large series of necropsies than from clinical studies.

In closing, I wish to express my appreciation of the kind co-operation of Dr. James P. Simonds, Professor of Pathology at Northwestern University Medical School who generously made available for this study all of his records. The records of the first thousand complete necropsies since January 1, 1929, were included in this study.

TABLE 1

a. Causes of death in cases in which atherosclerosis was considered the etiological factor of the primary cause of death.	
Cerebral hemorrhage or thrombosis.....	31
Ruptured aneurysm, Circle of Willis.....	2
Atherosclerotic heart disease.....	59
Coronary thrombosis	44
Pulmonary thrombosis	3
Mesenteric thrombosis	1
Gangrene of an extremity	5
145	
b. Causes of death in cases in which atherosclerosis was considered as the etiological factor of pathological lesions that were contributory causes of death.	
Syphilis of the heart and aorta.....	6
Pericarditis, chronic obliterative	1
Endocarditis, acute vegetative.....	1
Endocarditis, chronic rheumatic	2
Nephritis, subacute glomerular.....	1
Nephritis, chronic glomerular.....	2
Renal arteriolosclerosis	7
Bronchopneumonia	13
Pneumonia, lobar	6
Pneumonia, aspiration	1
Recent thyroidectomy	2
Cirrhosis of the liver, hypertrophic.....	1
Gangrene of the lung.....	1
Pernicious anemia	1
Diabetes mellitus	3
Myeloblastic leukemia	1
Cerebral hemorrhage due to trauma.....	1
Carcinoma	17
Fatty liver (acute alcoholism).....	1

Purulent bronchitis and bronchiectasis.....	2
Cholecystitis and cholelithiasis.....	3
Ulcer, duodenal with perforation.....	2
Ulcer, gastric with hemorrhage.....	1
Prostatectomy, recent	2
Septicemia	1
Pyelonephritis	1
Retroperitoneal and perirectal abscess.....	1
Adenoma of the prostate with retention of urine...	1

82

THE MEDICAL RELIEF PROGRAM OF THE ILLINOIS EMERGENCY RELIEF COMMISSION

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CHICAGO

The program of medical relief of the Illinois Emergency Relief Commission was developed by executives of this Commission in co-operation with a committee of members of the Illinois State Medical Society. It was adopted by the Commission at its meeting January 19, 1934. Since then, the plan has been adopted by ninety-two counties of the one hundred and two in Illinois and obligations totaling \$5,596,600.65 have been incurred in furnishing medical and dental relief to clients of the Commission. Prior to January 1 of this year, the obligations ran between \$200,000 and \$300,000 per month.

Perhaps the best justification that can be given for this program is the fact that it has worked and is still working as a practical means of furnishing medical aid to indigent men, women and children. In the main, I believe the program has been accepted by both the public at large as well as by the medical profession. While there are doubtless many people who may disagree with certain phases of this program, I believe that as a whole it is supported and that disagreements with it as a rule are due not so much to a lack of sympathy with the program itself as they are to misunderstanding of its relation to the entire relief program.

To understand the Illinois Medical Relief program, it is necessary to bear in mind certain basic principles and procedures under which the Commission operates. The Commission was created by the Illinois Legislature in February, 1932, for the purpose of furnishing relief to those who by reason of unemployment or otherwise were destitute or in necessitous circumstances.

In performing this task, the Commission proceeded on the theory that it was generally desirable to do things through established procedures rather than to set up new procedures for supplying people with the necessities of life. The Commission, for example, might have opened a chain of commissaries, to which all its clients would go for their food. Instead, it has operated on the procedure of using local groceries and markets. More recently, the Commission went on a system of cash relief for supplying families with their relief needs. This is in line with the general procedure of having normal conditions maintained as nearly as possible.

A man in need of medical services usually selects a physician in the community in which he lives and goes to him for treatment. The Commission recognized this procedure and adapted it so far as it could to its medical relief program. The program in its broadest outlines is very simple. Any practicing physician in good standing may state his desire to receive referrals from the Illinois Emergency Relief Commission through its various agents. The client of the Commission whose need for medical services has been established is permitted to choose a physician from the list of those who will accept relief referrals. While the program is elaborated by further controls, in its essentials, it is an adaptation of the normal patient-physician relationship.

In other words, the basic principle behind the medical relief program is the use of normal procedures in the furnishing of relief and is a preservation of the customary relationships between the patient and the physician. The program is, therefore, a concrete application of one of the basic principles of relief administration as carried out by the Commission.

Another important policy of the Commission which must be borne in mind in any consideration of its medical relief program, is the principle of supplementation. The Commission has at no time undertaken to provide all relief in the State of Illinois. It has always recognized the fact that there are private charities and public officials who are engaged in furnishing certain types of aid to indigents and it has never told these private agencies and officials that it interded to supersede them. On the contrary it has said: "You people have a job to do and we expect you to do it to the best of your ability. If the job becomes too big for you, we will come in and

help you. But you will still have the obligation to do your best."

It has been necessary to adopt various methods of carrying out this basic procedure. In many areas of the state it will furnish relief to those who are ordinarily termed employables, while the township officials and other agencies will assume responsibility for cases that are known as unemployables. The Commission, as a general rule, has not undertaken to furnish aid to indigents suffering from chronic ailments and to others who would be classified as unemployables. The result is that its medical program in many areas is limited to a part of the relief population. This is again an extension of the Commission's basic policy of assisting local organizations in providing relief rather than attempting to carry the entire relief load.

I think that an understanding of many procedures of the Commission depends upon bearing in mind that the word "emergency" is still in its name. It is not engaged in any long-time planning or in carrying out any programs that are designed to meet future rather than present problems. It recognizes the importance of such programs and it realizes there are many problems that are not of an emergency nature but it feels that its functions are limited to the more immediate tasks that have been assigned to it and that, therefore, it operates on what might be termed an essentially emergency program. What does this mean in terms of its medical program? It means simply that the Commission must limit its medical relief to the care of what we may call emergency cases. It cannot finance relief to sufferers from chronic ailments nor can it undertake to finance treatments that are not indicated by conditions requiring immediate attention. In making this statement, I am not arguing against the care of chronics or the treatment of conditions that are not aggravated. I am merely calling attention to the fact that the Commission is assuming responsibility for only those problems that are of an emergency character. As a consequence, the extent of the medical relief program is necessarily limited.

Another principle under which the Commission operates definitely affects its administrative procedures. When the Commission was established it determined to administer relief with the county as a unit. In order that the administration of its funds might be under the immediate

supervision of responsible leaders in each county, it appointed County Emergency Relief Committees to act as its agents. Because Cook County is so large and because the problems in it were so complex the Commission has assumed direct supervision of procedures in this county but in other counties it has operated through committees.

Medical relief is administered through the County Emergency Relief Committees in co-operation with the County Medical Advisory Committees appointed by the various County Medical Societies. State-wide control of medical relief is maintained through the department of medical and dental service which cooperates with the Illinois State Medical Society through its State Medical Advisory Committee under the chairmanship of Dr. John R. Neal.

There is, therefore, a close co-operation between the Commission and the medical profession in the carrying out of this program. In general, basic procedures have been developed by the Commission through its executives in co-operation with the State Medical Advisory Committee. These basic procedures have been brought to the attention of the County Emergency Relief Committees which have adapted them to their respective counties with the co-operation of the local medical advisory committees.

The Commission has been obliged to assume responsibility for referring cases to physicians. As a body created by the Legislature it was charged with the duty of administering funds provided for unemployment relief and it cannot perform that duty if it releases its powers. As a consequence it has adopted through its County Emergency Relief Committees procedures for referring clients requesting medical relief to physicians. The procedures tend to place this responsibility on a medical social worker or a nurse with public health experience. I think this procedure has proven satisfactory in the light of past experience. Naturally, the Commission cannot undertake to refer a person to a physician when there is no apparent need for medical aid. I am sure the medical profession does not care to see such a condition come about and the Commission as a matter of economy cannot have its funds dissipated through paying for unneeded services of any sort. It is responsible to the people of Illinois for the proper use of these funds and while it is ready to furnish all

needed relief up to the limit of its funds, it must maintain adequate control of them or fail in its duty to the State. As an indication of the importance which the Commission places upon medical relief may I call your attention to the fact that when the Commission shut down in April and May, 1935, it restricted the use of what funds it had at that time to the furnishing of food and medical relief.

The medical profession, I am pleased to note, has given the Commission splendid co-operation in safeguarding its funds against improper use and in assuring an adequate and efficient administration of medical relief. The County Medical Advisory Committees have accepted their responsibilities as public spirited citizens and have performed a splendid service in their respective areas. I would certainly be lacking in gratitude if I did not at this time express my personal appreciation to the members of the State Advisory Committee for the generous co-operation they have given and, also, to the various County Advisory Committees. Whenever I have taken problems to them they have viewed them in their relations to the welfare of the public and have brought to their work a leadership of which the people of Illinois and especially the medical profession may well be proud.

With the co-operation of members of your profession:

1. We have provided medical relief to approximately 50,000 persons each month at an average cost of about \$5.00 per patient per month for all services.

2. Over five thousand doctors have participated in this program. The business which went to the doctors has therefore been spread among many doctors in each county.

3. The physician-client relationship has been kept intact.

4. It has been demonstrated that it is possible to operate a medical relief program permitting the client to choose his doctor through a central or district control office and keep the respect and co-operation of the doctors.

5. We have been encouraged by the increased interest, on the part of many doctors, in public health problems with which we are confronted.

In conclusion let me state that the medical program of the Illinois Emergency Relief Commission has been designed to furnish medical aid to those in need of it through normal channels;

that it is an emergency program and as such cannot undertake to provide all needed medical aid in all instances. In its administration it is in fact the dual responsibility of the Illinois Emergency Relief Commission and of the medical profession. We, who are with the Commission, have valued the co-operation we have received from your profession and look forward to its continuation in the future for we feel you gentlemen realize that the ultimate success of this program is as much your responsibility as ours.

Before I sit down I would like to quote from a recent statement by Dr. Michael M. Davis, Medical Director Julius Rosenwald Fund.

Public welfare work is about to be reorganized (or shall we say organized?) in many localities as the result of the withdrawal of federal funds from relief. What medical care will be furnished by public welfare authorities in the future? By what systems or methods shall it be furnished? No one formula will answer these questions. We know that the extent of medical care, like the amount of relief, has varied widely in different cities and localities, according to their standards, resources, and attitudes. We know that the system under which public medical care for the poor is organized will have to vary also, according to local conditions.

How shall public welfare departments cooperate with health departments? With Medical societies? With hospitals? With outpatient departments and other clinics? Whether this co-operation is intelligent and effective will have immense influence over the quality and cost of medical care for the poor.

At this moment, in a rapidly changing situation in different parts of the country, the primary need is that public welfare officials shall recognize that the medical care load is likely to fall upon their shoulders in larger measure than ever before. Recognition of this responsibility will lead to study of the policies and methods through which good medical care can best be supplied.

MICHAEL M. DAVIS,

Director, Medical Services, Julius Rosenwald Fund.
(April Mid-monthly "Survey" Journal Social Work) Vol. LXXII No. 4, 762 E. 21 Street, Brooklyn, N. Y.

DISCUSSION

Dr. J. S. Templeton, Pinckneyville: This matter has been of great interest to us all for the last two or three years, and I was glad to hear Mr. Scott's paper this morning. He mentioned the fact that 92 counties out of 103 co-operated in this great work; and, there was some dissatisfaction among citizens and some among

the profession. I will say that something like five thousand physicians assisted in this great work. We owe a great deal to the State Committee. I well remember when this matter first came up before the Council. It was a new thing and we didn't know just what course to take. There was one thing that was made plain to that committee. We were unanimously with them, that, insofar as possible, the relationship of physician and the family should not be disturbed, which is one of the basic principles of the medical profession today. One of our aims is to maintain these principles. We don't want to embark on any unknown sea if we can possibly help it. The fact that every county was asked to co-operate was one good reason for success. Success in medicine will never be acquired through a list of bureaus established in Washington, D. C., or in any other center unacquainted with our needs, unless the local profession are taken into consideration. It has been demonstrated by this work, that where the profession is placed in charge and consulted, the results are far better. In counties where the local committee was strong and most active, there has been the least trouble with medical relief.

Many things are being done by bureaus and notoriety seekers that could be done far better by our profession. Our hope in these trying times is among ourselves. It is for the profession to step forward with loyalty and co-operation with our Department of Public Health and any other organization with whom we can co-operate. We must be loyal and observe the high ideals of Oliver Wendell Holmes and those of his day and since, who have been humane, honest, and energetic in caring for not only the rich, not only the common people, but the indigent and the poor as well.

We have had many things to be proud of and among them, I think, is the co-operation of the profession in this great work of which Mr. Scott has so eloquently and so plainly spoken. As to our future set-up, I fear we will have more trouble with our local affairs than we have had in the past two or three years. Most of our county organizations have seen these things coming, and are willing to co-operate. So, in our county, a committee was appointed, to draft a fee bill along the same lines that Mr. Scott mentioned. We handed the fee bill to our county commissioners. We left it open for discussion, and told them we would be glad to meet them at any time. However we have not had an invitation to meet these men.

The task is yet before us. And, as Mr. Scott referred to the fact that times were changing, these things have to be looked after, and it is up to the profession today to see that it is done in the proper way. In this work we have been doing, some of our members have been losers and some have been winners, but if we fight for what we believe to be right we will all be victors in the final count.

Dr. Charles H. Phifer, Chicago: I want to take this occasion as a member of the State Advisory Committee and as Chairman of the Advisory Committee of Cook County to congratulate Mr. Scott on his very able presentation of the medical program in Illinois. At the

same time I want to thank him for the co-operation he has given the physicians in the State of Illinois in trying to help us carry out the details of this project.

There are a few things in connection with the program that should be thoroughly considered: First, the responsibility of directing this project for the medical profession was placed upon organized medicine. Second, we have had the health and welfare of clients of the Commission to think of. Third, we have been the guardians and directors of public funds. Fourth, to make this program effective, it required competent local committees, the members of which had a good knowledge of medicine, were public-minded, fair and just in their decisions, and willing to sacrifice time in the interest of the profession and the public. Fifth, our reputations, as advisers and directors in connection therewith, has been at stake.

The question of policy and the question of judgment are items that have always been given a great deal of consideration by the members of your state and local committees. The responsibility and the magnitude of this program has varied in the different counties of the state. In Cook County we have had over 800,000 people on relief the greater part of the time. This metropolitan area was affected earlier and to a greater degree than the other parts of the state, consequently all available funds were exhausted in our county, which left us with the care of the chronic as well as the acutely ill. Prior to the installation of the Illinois plan, some 80 physicians in Cook County under civil service, carried on this work. During the last two years under the Illinois plan, over 2,600 physicians registered for this project in our county, and in this period of time more than \$1,090,000 has been paid to this group of physicians for the medical care of the indigent and unemployed.

Lack of proper understanding of the details of the relief program and its method of application has no doubt been responsible for some of the abuses we have had in our community, as well as some of the troubles of administration. The question of preventing abuses in chronic care has been one of our great problems. These abuses have been comparatively small, when we realize that of more than 2,600 physicians participating in the work, in only about one-half of 1 per cent. has it been found necessary to administer some form of discipline. The nature of the latter has varied from admonishment in some cases to suspensions varying in time from thirty days to six months, and in a very few instances indefinite suspension was recommended.

The high payrolls among pharmacists has attracted a great deal of attention recently in our county. During the month of March the drug bills in Cook County exceeded by \$10,000 the amount paid the physicians. This phase has been thoroughly investigated and is now receiving our full consideration.

In my opinion the Illinois Emergency Relief Commission has contributed a great deal to the care of the indigent and unemployed. Some of the principles they have maintained I hope may be continued after the Commission has been disbanded. I personally feel that among these, none is of greater importance than the

privilege of permitting the client to choose his private physician. This is a great improvement over the old type of contract practice, which had many objections. I trust that the Illinois State Medical Society may see fit to perpetuate for the time being at least, the function of the Advisory Committee, even though the question of relief is discontinued on the scale upon which it is at the present time. This Committee could have much to do in helping to bring to those responsible for relief in various townships and counties, the benefits derived from permitting clients to have their own private physicians instead of submitting to the former type of contract practice.

One of the most interesting things to me in this whole program has been the co-operation of the medical profession in fulfilling its share. Second, the change of feeling of the various social agencies regarding the medical profession, and the efficient manner in which they have adjusted themselves to the undertaking. I need only recall to those who are familiar with the first work of the state committee, the handicaps we had to meet in various parts of the state in attempting to inaugurate the plan. In Cook County it is most gratifying to our Committee to find that our sincerity of purpose and endeavor has won the support of the Council of Social Agencies, who are advisers to the Illinois Emergency Relief Commission, and the Cook County Bureau of Public Welfare.

Dr. Emmet Keating, Chicago: I haven't as yet become poor enough to make emergency relief calls in Chicago. In common with many physicians I am treating many people who can not pay their bills, but they are not on emergency relief. The first thing I want to say is, I do not believe that in the history of medicine in the United States, has so great a burden been carried as the burden carried by Doctor Phifer and his committee of doctors in Chicago. He has intimated that he faced a rather unfriendly situation. He is not only faced with that ordeal, but he has helped matters by changing the viewpoint of a great many people. He has had a tremendous task to perform. I think it is fairly evident to any one who gives the matter any thought that when any one except the patient, or the patient's immediate family, assumes the obligation of paying the doctor bill, dishonesty, incompetence and all the other disagreeable things appear at once. It doesn't seem to be economically sound for some one else to pay our doctor bills, and I think it should be emphasized over and over again that the medical profession has never refused to take care of the poor. It is true that in Chicago I have heard a few doctors say, "If they haven't any money, I tell them to go to the County Hospital. Why did you call me?" I am happy to believe and say that that is the attitude of only a few. The medical profession is always ready to take care of the poor and to do it without price. I do not believe that this emergency is going to continue forever. I believe it is our duty to try to make people understand that this is a temporary measure and that we, as soon as possible, want to get rid of all emergency relief.

So money-wise a man as J. P. Morgan said that re-

lief is only properly managed when it is managed by the small local community. That was when Mr. Hoover was president, but for some reason or other Mr. Hoover did not champion that idea, and Mr. Morgan was laughed out of court. But Mr. Morgan was right and is right now. The local community, the little community, should take care of its relief and then we would not have this tremendous machine that is eating up the bread and butter of those who are willing to work and must work to keep alive many of those who are not. So I would like to repeat that it is the duty of every organization in medicine to keep the doctors informed that our present situation is not permanent, that we will get back to our old plan of everybody doing everything he can to take care of himself.

Mr. Scott (in closing): I think there are just two reasons for the success of any program such as we have had. And the first one lies with the doctors. A committee is selected, and wisely, I think, in each county in the State to co-operate with, to advise and give us direction, and interpret the multitude of things that come up; advisory, to be sure, but nevertheless very important. That committee of doctors is so important I think it should be made up of the best men in the county. I do not mean all the doctors in the county are not good, but there are some doctors in every county who just cannot work at that kind of job. Even though the committee cannot agree with the program in its entirety, they should at least be sympathetic with the plan to keep the patient and doctor relationship open and to give us counsel.

The second reason for success is a reasonably well trained person, the nurse or medical social worker who handles the business of issuing referrals. This person should know how to get along with doctors; somebody who has more than ordinary common sense, who has a sense of humor, who can look the doctor in the eye when he gets a little excited, smile and keep his co-operation and good will. We have many instances over the State where the doctors tell me that at first they rebelled and would have nothing to do with the program, but now, as they watch the ethical procedure of the people in charge here and there—not all of them—and the way they co-operate, they are for this program, and they are not for some of the other methods of administering medical care. That comes from the members of your profession all over the State. Whether or not it will be continued I do not know, but the plan is working, not a hundred per cent. perhaps, but nevertheless working. Insofar as we have to go out and settle disputes or misunderstandings that come up, we have always found the doctors willing to listen to reason, and I think we lean over backwards in an effort to be fair with the doctors but we do have some trouble now and then.

CATEGORY

Judge: "How many children do you have, Mirandy?"

Mirandy: "Well, Judge, I has two by my first husband, one by my last husband, and then I has two of my own."—*Battalion*.

WHAT CAN COUNTY SECRETARIES DO FOR ORGANIZED MEDICINE?

C. S. SKAGGS, M. D.

EAST ST. LOUIS, ILLINOIS

The topic assigned to me is a question. The question pleads for an answer, but time at my disposal would not permit me to tell all county secretaries could do for organized medicine. No one who is a part of organized medicine has the opportunity to do so much for the organization as the county secretary. This being true, I am going to ask you county secretaries a question. What are you going to do for organized medicine?

It is not given to everyone in organized medicine to be a good county secretary. Yours is a special task. You who make good in this office are specialists and your opportunities are beyond your physical strength to fully discharge. What you can do and what you will do are two questions that are far apart and there yet remains what you should do.

The lack of unity in the ranks of organized medicine is not our greatest weakness, but our only weakness. With medical unity there could be no weakness or unsafe places in organized medicine. By medical unity I have no thought of selfish power but the unity of the ideals and purposes of organized medicine.

To have medical unity there must be hospitality and friendliness among physicians. To have this there must be a reason for us to exchange these attributes of confidence in each other.

The county secretary can, by personal contact with the individual members promote and bring such a relation into a reality in his society. I need not take your time to tell what this would mean to organized medicine with each county in the state society functioning under such a condition.

Education: When I say that there is a need for a better understanding knowledge of the purposes and workings of organized medicine among the rank and file of our members, I do not mean to cast any reflection upon the membership, but the fact remains that the majority of our membership knows far too little about what organized medicine is really doing for the individual

physicians. The average member has no idea that the great burden of the work of our state society is carried by less than two hundred members. They do not know that if these two hundred members should cease giving of their time, energy and I might say money, our state society would collapse and stop functioning. Our membership should know this and if they did we who carry the burden would be receiving help instead of oftentimes criticism and there would be more intensive work in the county societies.

Medical Society Dues: The average member does not know that the cost of maintaining organized medicine would be increased tenfold if this small minority did not give so freely. They have never appreciated the fact that they enjoy all the benefits of organized medicine for a cost far below the membership in a golf club.

These things should be carried to the individual member and the county secretary can do this more effectively than anyone else.

The Need of More Workers: To you who are here today, I need not tell that the work of organized medicine is already too great to be maintained by those who are bearing the burden, but there will only be one out of fifty of the membership at this meeting and if organized medicine is going to hold what it has there must be one out of each five members actively at work in the state society. This need cannot be long delayed or we will lose much of what we now possess.

The county secretary should make a study of the need of a more active relationship of the membership and then disseminate this knowledge to those who could and would work if they realized the need. In so doing you will not only add the needed help to maintain the state society but by strengthening the state, the American Medical Association will receive a much needed power.

The county secretary should be at all state meetings. It is just as important that each county secretary should attend the state society as it is for the delegate to be present for each county secretary should be familiar with all the actions and proceedings of organized medicine. I think that it would be good for you to attend the meetings of the House of Delegates that you might better understand the work your delegates do.

Your Secretaries Conference: Your session is

an important part of the state meeting and I believe that you would add to your efficiency if you would hold your meetings on Monday that more time might be had for your deliberations. I believe this would give an added prestige and increase your attendance. You might add further to your conference if each secretary would bring pressure to bear upon each county president to attend the secretaries conference. You realize as I do that it is the duty of each county president to attend the state meetings and I hope that each county secretary will consider it his or her duty to ascertain if the president of their society is present at this meeting and report to your secretary whether present or absent. In so doing you will be a great help to organized medicine, for if county presidents attended the state meetings they would understand organized medicine better and in so doing would add to the efficiency of their county society and thus strengthen organized medicine. If this could be accomplished, the state society would be able to recruit new workers to help carry on needed work that cannot be done due to the lack of help.

Organized Medicine Needs More Workers: All of you here have heard much criticism about what organized medicine does and does not do among the members of your county society, but this criticism comes from the member who is not active in the work for once a member becomes active, he sees the needs and not the faults. It is always easier to say something about something than to do something. It is easier to make excuses than to make good. What organized medicine needs is members who make good. You can't help the organization by finding faults. No one questions the fact that it has faults, but get in and help correct the faults.

The greatest criticism directed at organized medicine from membership is about what is not done. Not what is done. We who are at work realize that there is much that is not done that ought to be done and would be done if we had someone to do it. You secretaries can help organized medicine to get more workers and then there will be no place for this criticism for it will be done.

The Greatest Cost to This Nation is the High Cost of Low Living: There is going up from every corner of this nation the cry of the high cost of government. This is costing us money because we have lived low. The high cost in

organized medicine is not only robbing our profession of the right to live but it is robbing us of our heritage of medical science that we have labored for through the centuries and it is all the result of low living in our professional relationship.

Do You Know the Road You Are On? If you do, what are you doing to make the road safe to travel on? The Good Samaritan did well but he did nothing to make the road safe for himself and others to travel on. You secretaries can do much to make the road of organized medicine safe to travel on. Asking a question is a serious thing. You have asked me a question, I have tried to answer it. If you have seen the truth you must be willing to live it.

DISCUSSION

J. R. Neal, M. D., Springfield, Illinois: Dr. Skaggs has admonished you in a somewhat critical vein. I agree with every word he said and compliment him upon the vigor, brevity and pertinence of his language. I was particularly impressed, however, with his phrase—"The high cost of low living." Undoubtedly that expression describes the very heart of the source of national unrest in America today.

The situation is far from pessimistic, however. In spite of a good deal of unemployment the people in this country enjoy a standard of living not even approached abroad except, perhaps, in Great Britain. The unrest in the United States arises from a situation like that in which a college freshman finds himself. The freshman discovers after a very short stay at college that privileges are showered upon the upper classmen, especially seniors. He measures his situation entirely by the yardstick of the upper classmen, never recalling for a minute that by successfully graduating from grammar and high school he himself has already scaled the heights of educational achievements as compared with most people of a generation or two ago. Improvement in facilities of communication, transportation and manufacture has made the public conscious of the potential possibility of high living at low cost for everyone. As usual, the impulse is to leap from poverty to wealth at one short jump without going through the painful processes of gradual readjustment that are always essential to permanent progress.

Low living is expensive at any price. The mere recognition of this fact creates a wholesome unrest if the energy spent toward improvement can be guided properly.

So far as medical affairs are concerned, more has been accomplished in the United States toward preserving the integrity of the medical profession, while at the same time extending medical service so that it reaches constantly a greater proportion of the people with reasonable adequacy, than in any other nation under the sun. The private physician enjoys a greater degree of freedom while public health service and preventive medicine in general has reached a higher level

of efficiency without interfering seriously with private practice than anywhere else in the world.

From several standpoints our nation is still in the throes of sociological changes which create a situation more or less critical. The fortunate and optimistic fact is, however, that the true character of the situation is widely recognized. For that very reason it is freely discussed. The criticisms which are heard over the air and which burden the newspapers and magazines bring the whole picture to the surface. That gives every thoughtful person an opportunity to appraise conditions and shape his actions accordingly. Such action is entirely impossible in most European countries.

Medicine today is about where theology was when Gutenberg invented the printing press. Before Gutenberg, the secrets of the Bible were limited to the clergy. Once the Bible was printed every man became his own theologian because the clergy failed to appreciate the situation and failed to formulate a program of adaptation to the new world of theology.

The medical profession is still the repository of medical knowledge but publicity agencies have seized upon the subject of medicine with a vigor that parallels the interest in theology of another day. The medical profession is wide awake to the situation however, and is rapidly adjusting itself to the new circumstance. Failure of the clergy to go along with the current led to the creation of all manner of theological sects and even to wars. Medicine has recognized similar dangers and is up and about.

Medical information bureaus have been established in many places. These agencies, organized and maintained by the medical profession, have succeeded in obtaining the confidence of the press and of a large proportion of the population so that unreliable and false reports and newspaper accounts are frequently checked or corrected. In New York City last year the Medical Information Bureau of the Academy of Medicine handled 4,056 inquiries, 21% of which came from the press. Through this service false and misleading news was hindered and corrective statements released concerning cancer cures, tuberculosis remedies, thyroid gland functions, paternity tests, corneal transplantation and infantile paralysis serum and vaccine. The same bureau released a syndicated story daily through the Associated Press which was used in newspapers that reach 20,000,000 people.

Our own education committee performs services of the same general character and on a proportionate scale in Illinois.

No compulsory health insurance schemes have been enacted into law in this country. Corporations have been denied the privilege of practicing medicine. The standards of medical practice have been maintained on a high level and improved notwithstanding the efforts of quacks to the contrary. Money appropriated for health service by federal, state and local governments is spent, on the whole, in an orthodox manner, so far as the medical profession is concerned. Workable systems of providing medical service to the poor have been adopted in many places and doubtless will be adopted wherever new plans are needed.

All of this is so because of the intelligent efforts of organized medicine. The secretaries of county societies have been one of the most important factors in maintaining the organized machinery and in its efficient functioning. I admire and congratulate you upon the splendid job you have done.

More can be done and will be done. We have simply arrived at the Freshmen stage in our progress up the ladder of adjustment to meet the inevitable sociological changes which mechanical development has caused to be taking place before our eyes. We shall be seniors by and by, and enjoy the privileges of upper classmen. Dr. Skaggs has written the prescription. Let us accept it and live by it because he is a physician of parts who knows from experience and observation what the ailment is and what the therapeutic requirements are.

MEDICAL ECONOMICS—A SPECIALTY

A. M. MITCHELL, M. D.

TERRE HAUTE, INDIANA

This paper will be a surprise to you for the reason that it does not advocate, sponsor nor propose any plan for the care of the indigent or persons in the low income brackets.

Today we have to consider the practice of medicine from four different standpoints: First, curative medicine; second, scientific medicine; third, preventive medicine; and fourth, the economic and social aspects of medicine. In this discussion I will consider only the fourth phase—economic medicine and the social aspects of medicine and their relation to the physician.

With the new thought on social security that is being poured forth today by the braintruster, the sociologist, and even some of our own profession, it has become necessary for some of the medical profession, (volunteers) to assume the responsibility of this, the fourth phase of the practice of medicine. The Board of Trustees of the A. M. A., knowing that the average practitioner of medicine would not assume these obligations and also realizing the importance of this phase of the Doctor's life, created the Bureau of Medical Economics. Since then, all the state societies have established a committee on medical economics.

Now what do we understand by the terms "Medical Economics" and "Social Aspects of Medicine"? To me Medical Economics in its literal sense has a double meaning, depending upon the interested individual's interest.

From the physician's standpoint it means

proper and fair remuneration for services rendered, sufficient not only for the physician to obtain sustenance and good living conditions for himself and family, but sufficient excess income to amortize his cost of education, and sufficient to allow him to continue his education and still provide a sum for the rainy day or surviving family, should incapacity or death overtake him.

From the people's standpoint, medical economics becomes the problem of procurement of proper and adequate medical care at a price possible for them to pay, ranging from nothing to full payment for services.

Taken jointly, medical economics becomes a complex problem involving the doctor, the patient, and the community.

The community has assumed many responsibilities in these modern times, among which is the assumption of the health, not only of the community, public health, but of the individual. There is no question that the community from a humanitarian standpoint alone is responsible for the care of the indigent, and must also assist the individual who cannot or does not maintain a sustenance basis.

Between those who can maintain a sustenance basis and those who maintain themselves in varying levels above this basis, there must be a sliding scale of medical service charge gradually upward until a level of full payment is reached for those who can pay. This level, I think, can be fairly set at an income of \$3,000.00 annually for an average sized family.

There must be in many instances arrangements made for those able and willing to pay for services to settle their bills by installment payments. If this is done, many who are now overwhelmed by the thoughts of a large bill and make no attempt at payment, will be glad to pay in this way.

Social service to my mind means service to others to improve moral, physical, or spiritual conditions. The question of remuneration to the social worker is an entirely different matter; this then falls into economics.

A *trained* social service worker is very essential to the community and also to the physician individually. A *trained* social service worker can and does help those in need morally, physically, and spiritually. He does save the community money by eliminating undeserving people and teaching others how to become self-sustaining.

He helps the individual by teaching proper care. He helps the physician by information of the individual's economic status. The sentimentalist and the *untrained*, half-baked, self-styled social worker are a curse to the poor patient and to the physician alike.

Now let me enumerate some of the agencies that have a bearing on the material side of the practice of medicine from a physician's standpoint. First, we have medical organization; second, legislation and politics; third, foundations; fourth, hospitals; fifth, plans for medical care, and there are others.

First, let us consider medical organization. The report of the membership in the various state societies and the A. M. A. as contained in the April 4, 1936, issue of the "*Journal of American Medical Association*," shows that the number of doctors in organized medicine in 1936 is greater than in 1935, but there are still too many doctors that do not belong to any medical society and too many are not fellows of the A. M. A. If it is good business to belong to a county and state medical society, then it should be good business to be a fellow of the A. M. A.

At the present time in Illinois out of the 11,504 doctors, 7,085 doctors belong to the State Society and of this number, 4,418 are fellows of the American Medical Association. In Indiana, out of 4,049 doctors, there are 2,834 doctors that belong to the State Society, with 1,608 doctors being fellows of the A. M. A. In New York, out of 22,812 doctors, 14,375 belong to the State Medical Society and 9,347 are fellows of the A. M. A. In Pennsylvania, out of 12,608 doctors in the state, 8,415 belong to the state organization and 5,499 are fellows of the A. M. A. For the United States there is a total of 164,514 doctors with 101,754 belonging to the State Societies of which 60,374 are fellows of the American Medical Association. These figures show that about $\frac{1}{5}$ of the doctors are fellows of the A. M. A. Probably the reason for this is the question of dues that are charged for their county, state, and A. M. A. affiliations. Many of them pay into special medical and social organizations more dues by far than they do to organized medicine and never say a word. I know of one professional, non-medical organization in the United States that charges their members \$80.00 a year dues. Medical organiza-

tion is their protection and still they begrudge the money necessary to carry on the work.

Medical organization work has been done mostly by the volunteer county medical society secretary. This faithful worker has to earn a living besides caring for the problems of the doctors in his community. If each state society had one or more paid field workers, I believe that this percentage could be raised to a place that everyone would recognize the fact that the doctors stood together—"all for one and one for all."

Now we will consider the second part, legislation and politics. Legislation can take away from or add to the financial security of the doctors. The lawmakers do not consider the doctor as a necessary part of the law. They see only the public and the votes to be gained as did Bismarck and Lloyd George. Health legislation has been passed by the Federal Government and the various states. Each time a law was considered, the medical profession was ignored.

The Federal Government started working on economic security without consulting the medical profession and it was only through the volunteers and some influences on the outside of organized medicine that the advisory medical committee was formed. In my own state a social security act was drawn up by a professor of Sociology, without consulting the State Medical Society and it was only by being fortunate enough to have the Executive Secretary of the Indiana State Medical Society in the Senate that we were able with the aid of the doctors in the state to kill an amendment that threw open county health officers' positions to anybody who had a license to practice any form of medicine in the state. Each time it has taken the work of volunteers to stem the tide which is usually against them.

Doctors as a rule are not interested in politics. Little do they realize that the medical profession as a whole, if properly organized, would probably be the greatest political bloc in the United States. It has been said by the chairman of one of the major political parties that if the doctors were organized as they should be, they could elect anyone president, they could elect anyone senator, they could elect anyone to congress and so on down the list, that they saw fit to elect. They could even have enough of their own organization in the legislative bodies to control any legis-

lation for or against that might be attempted. Politics is a complicated business. The success in getting the right man in office has been done by volunteer workers. Volunteers cannot devote all their time to politics as the politician does because politics is a business.

The third phase is the foundations: The foundations which have been dabbling in health have been doing so only from the standpoint of the social worker who was trying to keep his job. Also the fact that the secretary or the director of the foundations was foisting his own ideas upon the public and not the ideas of the founders or the purpose for which they were organized, and through the influence of several volunteer workers, the foundations have been shown the light and as a result, several of the directors who have been fostering state medicine in the minds of the public have lost their jobs and those that haven't, have become quiet for fear that they would lose theirs.

Another side of this question is hospitals. How many doctors realize the difference between hospital facilities and medical services? How many doctors realize that their services in hospitals are putting the hospitals in the practice of medicine? How many realize that hospitals are putting out medical services as hospital facilities? How many realize that this question of hospitals is taking dollars out of their pockets? An interesting survey of this question is being conducted in one of the larger cities at the present time. I believe that when the result is published you will be surprised how they have been putting it over on you.

We have a lot of men in the profession who have voiced and crystallized sentiment against organized medicine. They have advocated some scheme or another to care for the health of the people and not one of them has ever been out into the actual practice of medicine in rural or even city communities. They are unfamiliar with the problems that the average doctor has to contend with and they are unfamiliar with the ideas that the people themselves have. Still organized medicine gives them recognition so that people feel and think their word is the word of organized medicine. They have made it hard for doctors in many localities to earn a living unless they participate in some of these schemes. If more doctors were informed along

these lines, they would exert a greater effort against any of these schemes.

Volunteer workers cannot overcome this influence. It will take the physicians especially qualified in economics to go out among the masses and teach them that these men are not the Voice of Medicine and they will have to put out something to take the place of what these men have advocated.

The social aspects of medicine consists of adequate income, housing, food, clothing and having something for emergency. The social worker can teach the people to live properly, to save and be self-reliant. The social worker can furnish the doctor with the individual's economic status. I believe all this hinges on the words of the late Samuel Gompers: "Put sufficient pay in the worker's pay envelope and he will take care of himself."

I have in my vague way tried to show that the volunteer, the County Medical Society Secretary, cannot continue to carry on all this work as he has in the past. His duties are multiplying rapidly and with all this multiplication of duties it will soon become necessary for physicians especially trained in economics to carry on this work just the same as large industries employ trained economists to carry on their work, and it will take money in the form of dues—say 5c out of the first dollar every doctor receives each day during the year—to carry on this work.

In conclusion I want to make clear the object of this paper; First, that the medical profession cannot depend on the county medical society secretary to carry on the economic side of medicine in the future as they have done in the past. Second, that physicians specially trained in economics are necessary to carry on this work in the future. And third that it is going to take more money in the form of dues to carry out this phase of medicine properly.

DISCUSSION

Dr. H. N. Rafferty, Robinson: Dr. Mitchell has given us an outline for medical economics which makes it easy to dissect and discuss, because of his directness to the points involved and scholarly handling of the subject as a whole.

To those of us already acquainted with Dr. Mitchell and having knowledge of the immense amount of time and thought and energy he has exerted in behalf of the economic improvement of our profession, this is no surprise. He has bearded the foundation lion in his den, and found the foundation, *per se*, not anxious to persecute or destroy the doctors. He has shown that in some

instances at least these malicious practices were the "brain children" of some misguided employee, allowed to run rampant, somewhat like the proverbial bull in the china closet.

Mention was made of the establishment of the Bureau of Economics of the A. M. A., and the appointment of committees of economics in most of the state medical societies. Personally, I feel that our teaching schools, both undergraduate and graduate, should have chairs of economics, so that the new crop of practitioners turned loose in the various communities each year should have at least a basic idea of the business fundamentals so necessary to the successful practice of medicine. Each county society should have an active committee on economics, and should devote at least one meeting a year to a consideration of this phase of the practice.

Medical economics is necessarily concerned with the fees received for the prevention and care of illness, but it is also most vitally concerned with the type of service the public receives from its doctors. Broadly speaking, therefore, it is social economics. It concerns society in its constant quest for relief of present illness, and protection against future illness. Anything which improves the culture and efficiency of the physicians of a given community serves a social end just as do improvements in food and housing.

If we continue to eradicate disease after disease, as in the past, preventive medicine must be in the hands of the private practitioner rather than in those of public health agencies, and we must be paid for prophylaxis fully as well as we have been for guidance during established disease.

I was particularly impressed by the suggestion of the sliding scale charge for that sizable portion of each community which is above the indigent class, and yet unable to pay the standard minimum fees. In our own group this practice was put into effect to a much greater degree than ever before about 1932. We found it actually increased our cash incomes, while preserving the manhood and self-esteem of those patients who were thus made to feel they were paying their way. It also served to increase our confidence in human nature.

Our people should be trained to the necessity of prompt attention to these reasonable obligations for service, just as they have been in regard to the merchant for his wares.

Just what is the fundamental difference between business and our profession? Business is organized for profit while our profession is basically organized for service. With business, service is incidental. With our profession profit seems to be. But, just as it has been demonstrated that a business cannot endure and prosper unless it renders service, so too it should be conceded that the medical profession, if it is to continue to render its highest type of service to society, is entitled to a degree of profit which will permit its individual members to meet, with comfort and assurance, the same economic pressure to which other groups are subjected.

I heartily concur in what was said concerning the amateur, untrained, social service workers or "uplifters" as I like to hear them called. After contact with one of these, I find solace in the prayer of Robert Louis Stevenson: "The day returns and brings us the petty

round of irritating concerns and duties. Help us play the man, help us perform them with laughter and kind faces; let cheerfulness abound with industry. Give us to go blithely on our business all this day, bring us to our resting beds weary and content and undishonored, and grant us in the end the gift of sleep."

That medical economics is a specialty is without doubt. That we can find doctors in sufficient numbers to assume that specialty I doubt; until that time arrives we will have to keep shoulders to wheel.

Dr. Charles S. Skaggs, East St. Louis: I do not like to disagree with one who has given as much study to this subject as Dr. Mitchell, but I can see the tendency of some enthusiastic and loyal worker, becoming overworked, to begin to look around to find some place for relief and in looking about it is frequently the case that they begin to look for paid workers in the field, as he suggests. I may be entirely wrong about this but I believe it is a dangerous procedure. Whenever you go and hire somebody to go out and make doctors loyal to organized medicine, I am afraid the loyalty will be very thin. I will grant you, the county secretary is overworked, but when you go to pay him for this you bring about a situation that will be worse. You had better hire two or three good secretaries who have the love of organized medicine at heart, so that it will be purely medical. I know we must have more workers. But I doubt whether it is advisable to have a fellow go out into the field and try to bring about loyalty among the medical profession because he has a salary. I am wondering if medicine is not a great deal like religion. It is the inner principle that must come from a personal love rather than a salary. I may be wrong and we may have to hire the thing to be done, but I think we should better stay away from that. I will grant you there are a few hired secretaries that are laymen doing a good piece of work but I have never yet found one that measured beyond a good volunteer medical secretary in a county society, or the State society, as good as they are. I have no apology to make when I say that I would like to see a lay State secretary, doing anything beyond the one we have in Illinois, who is doing a volume of work, it would take four men to do, and yet keeping up a pretty good practice along with it. Dr. Mitchell, I may be wrong.

Dr. Mitchell (in closing): I am basing my thoughts on the success we have had in Indiana with our State Secretary. We have in Indiana, out of a total of 4000 doctors in the state, within 300 of the membership we want. We have nearly a 100 per cent. membership, and the man, the State Secretary, we have has gone out and done wonderful work in getting a lot of men in to the society.

Dr. Skaggs: How many of these extras attend your State meetings?

Dr. Mitchell: I just could not tell you offhand.

Dr. Skaggs: Have you increased your attendance at the State meetings?

Dr. Mitchell: Yes. Last year we had the largest attendance of any State meeting we ever had, 1800.

Dr. Skaggs: I want to know whether the members were brought in and just signed on the dotted line or whether they are loyal.

Dr. Mitchell: Three years ago we had an attendance of 1000 at the State meeting, it jumped to 1400 and then to 1800. That shows the increase in the registrations at the State meetings and the interest in organized medicine in the last three years. We have only one paid man in the whole state and the rest of them are volunteer workers.

Mr. H. P. Scott, Chicago: I am not a doctor, but from the point of view of a layman and from my traveling up and down Illinois, I think there is much good work that could be done alongside of the secretaries in the various societies by someone who has a genuine interest in and some knowledge of the problems which confront the doctor. You can strengthen the hands of these men who work in the counties. In many counties I have been in I have been told that only one or two doctors are giving any time at all to this business.

I call to mind a county some hundred miles from here where most of the doctors have become less interested in their organization for some reason or other. The young doctor in this particular county who is trying to handle the situation needs help; he told me so. He is busy trying to make a living, but a little help afforded him will go a long way towards strengthening his hands in building up more interest on the part of the doctors themselves in their own organization.

Dr. Andy Hall, Mt. Vernon, Illinois: There is no session more important than the Secretaries' conference. It is one of the most important sessions on our State Program. It should be attended not only by all Secretaries but all delegates and other members of the society should be urged to attend this meeting.

Here we discuss subjects and policies of vital importance to the County Medical Society in which most physicians are deeply interested.

The County Medical society is the most important cog in organized medicine, because it is a society that most of the physicians attend. Take a live County Medical society with membership of say, 25 to 35 and the members will usually attend at least eight of their local meetings annually. They will also attend perhaps eight meetings in the adjoining counties annually. But only about twenty per cent. of them will attend a meeting of the State society and even a smaller percentage would attend the meetings of the A. M. A. Hence the importance of a good County Medical Society.

I have served as Secretary of my own county society for twenty years and upwards. I have never had an assistant or received any salary for my work. However, I think I have performed my duties as well, if not better, than any lay Secretary would have done. Not only have I served as Secretary of the Society, but I have found plenty of time to attend to my other professional work. While I have never gotten rich, I have lived well, own a good home and have educated three boys in medicine.

There is no reason why a member of the Society could not perform all the duties of a Secretary in a Society the size of Sangamon County without employing a lay secretary. There is no reason why a county with a membership of 25 to 35 can not have as good scientific programs as you will have in your State society provided you have a live, wide awake Society.

I am not very strong on these social workers. A few years ago in my county the Captain of the Salvation Army and his wife and our supervisor attended to all the social work required in our community. Then under the new deal, with all the frills that go with it, we have had a lay personnel of as many as 35 or 40 at times, doing the work that our supervisor and the Salvation Army captain and his wife did a few years ago.

Ofttimes these lay social workers will send a physician to places to see parties who need no medical attention whatever. Sometime ago I was directed, by one of these social workers, to go over twelve miles to see a patient they said was very sick. The social worker had gone out there, made an investigation and said that this party needed medical attention. I made the trip there, twelve miles, and back. The next day they sent a social worker out to see if the patient had received proper attention and if they needed further attention.

The facts are, three persons made three trips, twelve miles and back, making a total of seventy-two miles, to see a malingerer who needed no medical attention.

Dr. D. D. Monroe, Alton: I think I might qualify as a career secretary. I followed Dr. Feigenbaum whom some of you men knew. He, too, was a career man. He was in office so long that Madison County Medical Society was known through him. I get six dollars a month for clerk hire. I like my work. I am also the auditor, bookkeeper and the dues collector. Once a month I get out a twelve page publication for the profession in Madison county. I am also secretary of the county tuberculosis association which is an activity of our county medical society.

Another thing that has interested me has been the complaint that we are going to be out of a job some day. I do believe that the doctors will never be out of a job. Why do I say that? At Kansas City the other day I saw these statistics: In 1900 there were 636 people per physician in the United States. In 1934 the number was 784 people per physician. With our higher standards of education, the population is growing faster than the number of doctors is growing. I think all of us should take courage and inspiration from this fact.

Miss Jean McArthur, Chicago: Our Educational Committee is able to assist with a good deal of the office work of county secretaries. With that in mind, we have notified secretaries that the office of the Committee would be glad to secure speakers to address the monthly meetings of the societies, to send out notices to the members and doctors of adjoining county medical societies, and to furnish publicity of these meetings to the newspapers.

A number of secretaries have taken advantage of our offer. The result has been that some counties which formerly had an attendance of perhaps fifteen or twenty at the monthly meetings now have between 60 and 75, even 100. In LaSalle County we have been mimeographing postal card notices and sending them to quite a list of doctors and have given stories to the newspapers in that section of the state.

This type of assistance gives the secretaries an opportunity to devote their time to the organization work and relieves them of some of the office details which naturally fall on their shoulders.

Dr. Samuel E. Munson, Springfield: I do not believe in putting young men in the office of secretary where older men are available, as they know very little about organized medicine, and I think the failure of many county medical societies is due to such inexperience. I believe as long as a man is capable, he should be continued as secretary. It matters not who the president is so much, but it is of vital importance as regards the secretary. The secretaries are all overburdened with the running of the affairs of the county medical society and are certainly underpaid.

About a year ago our Council decided that we should pick four or five men out of the district that could be prepared to go around and make talks on economics and health subjects. So I started calling on my societies along in the midsummer and gave them the thought that they should appoint their own committees for this purpose; also that all literature that came to the secretary's desk should be turned over to this committee, and the chairman made responsible for the work along this line in his county society. I know there have been some failures and successes from this plan. I am going to check up on my societies and recommend that they continue these committees, because the secretary's desk is usually piled high all the time without this assistance. As stated before, he has very little money paid him. I think my own Sangamon County Medical Society, with a paid-up membership of 125, pays the secretary \$50.00 a year, which should at least be \$150.00 a year.

These are some of the reasons for not changing secretaries.

Chairman Snively: We do not have the attendance at these conferences that we should have from an organization such as we have in Illinois. Dr. Mitchell, can you tell us something about the Indiana program?

Dr. Mitchell: When you get into a secretaryship, you get into it clear up to your neck. I have been secretary of the society for seventeen years and I have been chairman of the committee on secretaries' conference in Indiana for nearly eight years. When you get into it and do a half-way decent job they will not let you get out. They are talking about paying the county secretary \$50.00 a year in Springfield; I think in the last seventeen years I have had a few postage stamps for my services, and that is about all.

Our secretaries' conference in Indiana was organized about 1926, and they had one or two meetings and finally they shoved the job on me. I conceived the idea that our State meeting was held about the first of October and that our legislature would meet in January for sixty-one days. At this time a lot of social security ideas and a lot of medical legislation would come up. In 1927, when we were revising and rewriting the new practice act in Indiana, which makes it illegal for anybody to practice medicine who does not have licence from the state board of Medical Registration, which keeps the nurses from giving anesthetics and the hospitals from practicing medicine. And this law was passed by the legislature. We decided that the best time in the year to have our secretaries' conference was along about the first of February, after the legislature had been in session for about three weeks. At that time most of the legislation that would be proposed for or

against the doctors would be in the hopper and, if there was anything to be done about any pending legislation, we had the secretaries in front of us at Indianapolis. We told them about the pending law, what we wanted them to do and asked them to go home and get busy. That was the prime thing we wanted to do: ask them to get busy. So, to make it interesting, we decided it would be worth while to go over the country, pick out men who were up on some popular subject other than the practice of medicine and have him talk at these meetings. At the last meeting we had, the first of February this year, we had Dr. Elliott, who was Chairman of the Medical Economics Committee of the State of New York Medical Society, and we had Dr. Meyerding, Secretary of the Minnesota State Medical Society, and we had Dr. West for after-dinner speaker; we also had Dr. McCowan, who is with the Children's Bureau of the Department of Labor. We put up to him the question, what was the attitude of the Children's Bureau of the Department of Labor on the social security bill, child health and maternal welfare, as they had to do with it. We have had at our meetings, out of eighty-three county society secretaries, about 85 per cent. attendance. We have a representative from practically every county in the State. We invited the doctors throughout the State. Our meetings run around 150 to 175 for that day. We begin at noon and go straight through until the work is finished, if it is nine or ten o'clock at night, according to the program, and we always have them on Sunday. Ordinarily most doctors do not have much to do on Sunday from 12:30 or 1:00 in the afternoon. We find it very successful to have them on that particular day. I believe it is the greatest and best way to educate the county secretary. All we pay for attending the meeting is a dinner. The State Society pays for any speakers we have, regardless where we get them, pays for the dinner of the county society secretaries and the presidents of the county societies that are in attendance. All others pay a dollar for their dinner. Every doctor in the state is welcome. We find it has been a great thing to help us out along the line of legislation. It is half-way between our state meetings, keeps them enthused and it brings before them a lot of subjects that would not be discussed until six months later at the state meeting. I think it is the best idea to have the meeting half-way between your state meetings. You can bring up a lot of points and get the attendance. I think you will get a good attendance in this state if you do the same thing.

Chairman Snively: The meeting is open for any questions.

Dr. D. D. Monroe, Alton: In Madison county one of the most difficult situations we have to handle has been created by the activities of a doctor who is not eligible for membership in the county society; his application has been turned down for a number of reasons at various times. He is permitted by the board of supervisors to administer relief to township patients and the unemployable. To us that is a real problem. What shall we do with that sort of situation? It seems that the licensing department of the State of Illinois and the standards set by the Illinois State Medical Society are so at variance that this man can go on and practice

medicine and upset the whole economic situation, and still there is no remedy for it because the board of supervisors can treat with him. I would like to know what you do with a situation of that sort?

Chairman, Snively: Who can answer that question? Dr. Hall?

Dr. Andy Hall, Springfield: I have nothing to say.

Dr. A. M. Mitchell, Terre Haute: Public education. The only way is to educate the people in the community. If the doctors have enough intestinal fortitude to go out and make themselves active in educating the public in the community, that will overcome this thing.

PECTENOSIS AND PECTENOTOMY IN ANO-RECTAL DISEASE

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CHICAGO

The description by Stroud in 1896 of an important anatomical landmark in the anal canal which he called the "pecten" and the report of a fibrous connective tissue band affecting this area called "pectenosis" by W. E. Miles in 1919 laid the foundation for a most valuable contribution by A. Lawrence Abel in 1932, entitled "The Pecten: The Pecten Band: Pectenosis and Pectenotomy." The observations of Abel as reported in the above paper are believed by the writer to have markedly changed the conception of the anatomy, pathology and treatment of many anorectal conditions. These observations will be briefly reviewed along with our personal experiences with pectenosis and pectenotomy in 105 cases.

Anatomic Consideration. A clear understanding of the anatomy of this area simplifies the diagnosis and treatment in about 85% of all anorectal disease. During fetal life the proctodeum pushes in and the hind gut pushes out. Where the two meet a membrane forms known as the anal membrane. During the fourth month of intrauterine life this anal membrane ruptures, forming a communication between the bowel and the exterior. Should this membrane not rupture, one of the types of imperforate anus results. Where the anal membrane ruptures an irregular line remains, which is known as the pectinate line (taken from the Latin pecten) which means like the teeth of a comb. This line is also called the dentate line because it resembles the edge of a row of teeth. Arising from this line are the anal papillae and above this line are the columns of Morgagni which occupy the upper two-thirds of the anal canal. The

bases of the anal papillae are connected by a number of irregular semilunar folds which are known as the anal valves. These form a number of small pockets or sinuses known as the crypts of Morgagni, (Fig. 1.).

In 1863 Hilton described a white line which he believed to correspond to the lineal interval



Fig. 1. Anatomical drawing of the anal canal showing the musculature and surface landmarks. A, The ano-cutaneous line; B, the white line of Hilton; C, the pectinate line; D, the anorectal line; B-C, the pecten.

Note the columnar epithelium of the rectum proper above the anorectal line (D); the cuboidal cells from the anorectal line (D) to the pectinate line (C); the transitional stratified epithelium of the pecten (C to B) and the squamous epithelium below Hilton's line (B to A). (From Morgan).

between the external and internal sphincter muscles. This line is often referred to as the muco-cutaneous junction because below this line the anal canal is lined by squamous epithelium, indistinguishable from ordinary skin.

Between Hilton's line and the pectinate line is the area described by Stroud as the "pecten," (Fig. 1.). This pecten area varies in width from one-third to one-half inch and occupies approximately the middle one-fifth of the anal canal according to Stroud. Its color is intermediate between that of the skin and the mucous membrane of the rectum and in a normal subject has a glistening, smooth appearance. The pecten is

lined by transitional stratified epithelium, differing from the cuboidal cells above its upper border (the pectinate line) and the squamous epithelium, below its lower border (Hilton's line). The pecten is therefore neither skin or mucosa. The part below Hilton's line occupies the lower two-fifths of the anal canal. Where the cuboidal cells of the columns of Morgagni become columnar cells, one finds an invisible line known as the anorectal line which marks the upper border of the anal canal and the beginning of the true rectum.

This line is about 1.5 cms. above the pectinate line, is more or less indefinite and is recognized chiefly by the shape of its cells microscopically. The anal canal therefore, is made up of the columns of Morgagni which occupy the upper two-fifths; the pecten which occupies the middle

(A)

(B)



Fig. 2. (A) Section through anal canal showing pecten band encircled, in relation to normal structures. (B) Microscopical view of portion of A enclosed by circle. Note: above and below, fibers of internal and external sphincter muscles respectively; right center, organized fibrous tissue forming pecten band; above and below this, veins of superior and inferior hemorrhoidal plexuses respectively. (From Abel).

one-fifth and the lower two-fifths from Hilton's line to the anal verge, (Fig. 1.).

Blood Supply: The pecten is a most important landmark as it is the dividing point of the vascular systems, the nervous systems, and the lymphatic systems, which supply the ano-rectum. It also divides the skin from the mucous membrane. The pecten separates the

vascular system which supplies this area. Above the pecten the superior hemorrhoidal vessels penetrate three definite areas with main branches and as many as five secondary areas with secondary branches. If internal hemorrhoids develop, they practically always develop primary hemorrhoids above the pecten in three definite locations namely, the right anterior, right posterior and the left lateral quadrants which are supplied by the three main branches of the superior hemorrhoidal vessels. Secondary hemorrhoids may develop in between these definite locations according to the secondary branches which supply this area such as the anterior, left anterior, left posterior, posterior and right lateral quadrants. Below the level of the pecten lies a venous ring, which is supplied by the inferior hemorrhoidal plexus. When hemorrhoids develop in this area they appear in two definite forms, the chronic, as anal verge varicosities and the acute form, as thrombotic piles.

The internal hemorrhoidal area (above the pecten) area is drained by the portal system while the external hemorrhoidal area (below the pecten) by the inferior vena cava. This is important clinically because circulatory metastasis from a carcinoma above the pecten is to the liver while below the pecten metastasis may enter the general circulation and appear most anywhere.

Terminal vessels of the superior and inferior hemorrhoidal vessels reach the submucosa of the pecten and communicate with each other. Varicosities of this area commonly produce a combination type of hemorrhoid known as the intero-external hemorrhoid which is made up of a combination of internal and external hemorrhoids, united by an intermediate or communicating hemorrhoid in the pecten.

Nerve Supply. Above the pecten the anus and rectum are supplied through the sympathetic nerves in a manner similar to that of the rest of the intestine and sensation to pain is practically absent. This is important, clinically, because it explains why carcinoma of the rectum develops to a considerable size without producing any marked discomfort. Many with far advanced carcinoma of the rectum come in complaining of piles, with the single and only symptom of bleeding. It also explains why internal hemorrhoids may exist for many years accompanied by bleeding and prolapse but no pain. Only when

prolapsing hemorrhoids become strangulated in the sensory nerve supplied pecten area, does pain commence. Below the pectinate line of the pecten, the area is supplied by sensory nerves and lesions of this area are painful. This explains why infected crypts, hypertrophied papillae, anal fissures, sub-muco-cutaneous abscesses, thrombotic piles and carcinoma below the pectinate line cause pain.

Lymph Supply. The pecten is also the dividing line between the somatic and visceral lymphatics. Above the pecten the lymphatics drain

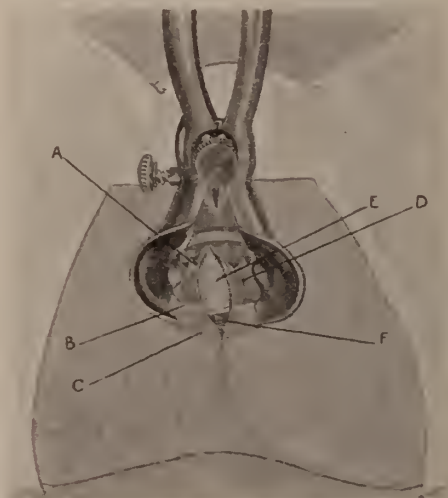


Fig. 3. Immediately the mucous membrane and skin have been divided, the white fibers of the pecten band come into view. In old chronic anal fissures the pecten band can easily be seen following the administration of a local or general anesthetic. A—Pectinate line; B—Hilton's line; C—Ano-cutaneous line; D—Anal mucosa; E—Pecten band; F—sphincter muscle distal to band.

to the peri-rectal, sacral, iliac and aortic nodes: while below the pecten the drainage is to the inguinal glands. This explains the enlargement of the inguinal glands in carcinoma and venereal ulcers below the pecten area. Undiagnosed inguinal nodes may sometimes be explained by examining the lower anal canal.

Etiology of Pectenosis. Chronic passive congestion from either internal or external hemorrhoids may lead to passive congestion in the pecten area because the tributaries from the superior and inferior hemorrhoidal veins arise from a minute capillary plexus in the submucosa of the pecten. Hypertonicity or spasm due to chronic cryptitis or inflammation also produces a local passive congestion. Constipation, straining at stools, lacerations from the

passage of hard stools, irritating liquid stools, may also cause passive congestion in the anal canal. Sometimes a pecten band may exist without any associated pathology in the anorectum. With passive congestion in this area from any cause follows round cell infiltration, and a circular deposition of fibrous connective tissue in the submucosa of the pecten. Such a deposit in the area of the pecten produces the condition described by Miles and Abel as "pectenosis", (Fig. 2). Miles described this condition as follows: "The fibrous deposit takes the form of a circular band varying in the thickness and density, completely surrounding the lower part of the anal canal, and situated between the mucous membrane of the pecten and the external sphincter muscle. In well-marked instances the band of fibrous tissue can be distinctly felt, and gives an impression to the examining finger such as would be obtained if a rubber umbrella ring had been inserted beneath the skin at the anal margin. I have named this deposit of fibrous tissue in the submucosa of the pecten "the pecten band". The pecten band does not exist in the healthy anal canal. It is purely pathological in origin."

Abel likens this fibrous tissue deposition to the indurated zone in the neighborhood of a varicose ulcer of the leg; or the fibrosis in the wall of the esophagus opposite the whole length of the cardiac sphincter in cardiospasm; or the dense fibrous tissue in the gastric wall opposite an ulcer forming the well known hour-glass stomach. J. W. Morgan excised wedge-shaped sections of the pecten band in seven cases. Histologically five showed diseased fibrous connective tissue and in two unstriated muscle with fibrous tissue, removing any doubt that the band divided was the external sphincter.

The longer chronic congestion exists, the more fibrous connective tissue is deposited and the denser becomes the pecten band. The denser the band, the more difficult is it for the sphincter muscles to relax. The anal canal becomes avascular, loses its elasticity, becomes rigid, narrower and when one examines this area the finger is tightly squeezed by the contracted lumen. The size and caliber of the feces become diminished and the patient complains of difficulty in obtaining complete emptying of the rectum. The more difficult it is to

defecate the more the patient strains and the more aggravated becomes the pectenosis. A vicious circle is established. If piles prolapse and are not promptly reduced they become edematous and then strangulated by the non-yielding pecten band.

Sequellae of Pectenosis. Because of the fibrous tissue deposition in the submucosa of the pecten area, the mucous membrane, instead of being freely movable over the adjacent tissues, becomes anchored to it and poorly nourished with blood. This renders it more vulnerable to trauma. Normal crypts of Morgagni may then become traumatized by seeds, skins and fibres in the stool, with resulting enlargement and inflammation, producing the condition known as cryptitis. Infected, inflamed crypts become a definite focus of infection and irritation. Chronic discharge from an infected crypt causes inflammation of the semilunar valves with resulting hypertrophied papillae and papillitis. A constipated hard stool may crack open a crypt or any portion of the poorly nourished, tightly adhered anal canal with a resulting fissure-in-ano. We agree with Abel who states that it is uncommon to find an anal fissure in a patient without a preexisting pecten band.

If, because of increased anal spasm, tightness, or occlusion of a crypt-opening by debris, pyogenic substances become imprisoned in a crypt, an abscess develops which is usually followed by a fistula. Or, because of cracks or fissures, bacteria may pass into the lymphatics or veins of the anal canal and thence to the tissue around the anus, with resulting abscesses or fistulae. Abel theorizes, that because the mucous membrane of the rectum becomes avascular and unhealthy in patients with long-standing pectenosis, secretion of normal mucus is apt to become excessive, bathing the skin with an irritating liquid and the patient suffers from pruritis ani. When no other pathological condition exists in this region, says Abel, the pruritis ani may be cured by performing the operation of pectenotomy. It is interesting to speculate further, says Abel, that sometimes the pecten band may be responsible for the development of carcinoma in the altered mucous membrane of the anorectum.

Personal Observations. In 1933, Miles and

Abel's interesting observations on pectenosis came to the writer's attention, who began to carefully scrutinize the anal canal in all patients presenting proctologic complaints. At first it was difficult to change his conception of increased anal tightness, believing it to be due to anal spasm or hypertrophy of the external anal sphincter. Even palpating the anal canal in pathologic conditions did not convince the writer that a definite band actually existed. The first convincing bit of evidence occurred when a patient presented himself for operation for a fissure situated in the posterior anal canal. Complete relaxation following a local anesthetic, disclosed a definite white band of fibres lying at the base of an old indurated lesion. Formerly our procedure in such cases was a thorough divulsion or stretching of the anal canal, followed by excision of the fissure, the coexisting sentinel pile and the associated crypt. In this case we decided to do a Miles-Abel pectenotomy. The operation of pectenotomy as described by Abel is performed with the patient lying in the right lateral decubitus. The non-lubricated left index finger is introduced into the anal canal and the right posterior quadrant of the anal canal is everted. A little to the right of the midline an incision is made parallel to the long axis of the bowel, the upper end being situated half an inch above Hilton's line and its lower end a short distance below this line. Immediately the mucous membrane and skin have been divided, the white fibres of the pecten band come into view, (Fig. 3). The incision is carried deeper until the complete thickness of the dense fibres of the pecten band is divided and the reddish-brown fibres of the external sphincter are visible. The writer has modified the above procedure in the following manner. The lithotomy position is utilized instead of the right lateral; a bivalve speculum as shown in the illustration is used to expose the anal canal instead of the eversion with the left index finger and the incision is made directly over the fissure or in the mid-posterior line, instead of a little to the right of the mid-posterior line. To our surprise following the cutting of the band the anal canal spread apart with ease, and where only one finger was admitted before incision of the band, four fingers now passed comfortably into the rectum. A crypt passing

through the fissure and into a sentinel pile skin tag was excised along with the redundant edges of the fissure. The patient made an uneventful recovery. Since the writer's interest has been aroused in this procedure he has done 105 pectenotomies following the technic outlined above. Our series includes a variety of anorectal conditions associated with pectenosis. The greatest number were instances of cryptitis and papillitis; the second most common condition found was fissure-in-ano; fistula was third; puritis-ani was fourth, and the least number were hemorrhoids with pectenosis. (Table 1.)

TABLE 1.

Cryptitis and Papillitis with Pectenosis.....	37
Fissure-in-ano with Pectenosis.....	34
Fistula with Pectenosis.....	12
Pruritis ani with Pectenosis.....	13
Hemorrhoids	9

105

Although Stroud describes the pecten as an area $\frac{1}{8}$ " to $\frac{1}{2}$ " wide extending from Hilton's line to the pectinate line, we have found the white fibres of this band to extend slightly below Hilton's line and even more so above the pectinate line, with an average width of about 2 to 3 cms. We have also noted a layer of fascia between the pecten band and the sphincter muscle fibres, not described by Abel.

We have not incised the band a little to the right of the posterior midline as suggested by Abel because we have never understood the rationale of this procedure. Instead, we make our incision over the center of the fissure, wherever it may happen to be located. It must be kept in mind that this area is very vascular and excessive bleeding frequently occurs when the pecten band is incised. In ligating bleeding vessels, one should be careful not to reunite both edges of the incised band as this may defeat the purpose of the operation. Although Abel does not state that his pectenotomy incision should be continued down below Hilton's line and out onto the skin, it is our belief, that in order to insure better drainage the incision should be extended beyond the ano-cutaneous line, (Fig. 3.). In our series of cases we have followed this rule with excellent results.

Since our first pectenotomy we have performed no more divulsions on any anorectal cases. There seems to be practically no need

for such a procedure any more. In fact divulsions seldom ever gave our patients permanent relief from anal tightness.

We always felt that divulsion in most cases produced only temporary relief. Patients would return after several months following anorectal stretching with the same complaint of anal tightness or recurrence of cryptitis or a fissure. We have had only two cases of recurrent anal tightness, since performing the operation of pectenotomy and in both of these patients, a cryptitis was noted along with hemorrhoidal varicosities. It is our impression that pectenotomy tends to maintain indefinitely normal anal tone, but should passive congestion recur for some reason or other it is possible for another pecten band to develop. In cases of pruritis ani, cryptitis and papillitis, the pectenotomy incisions were made in the mid-line posteriorly. In submucocutaneous fistulae we have incised the band wherever the fistula happened to be, anteriorly, left or right laterally or posteriorly.

The operation of pectenotomy is usually done first. Following the cutting of the band and the ligation of bleeding vessels, crypts are usually excised, hemorrhoids removed and any other existing anorectal pathology remedied. For the first week following operation, patients experience a slight anal incontinence. However, after $2\frac{1}{2}$ to 3 weeks the wound is completely healed and perfect sphincteric control is established. Discontinuing or diminishing the amount of mineral oil routinely administered after anorectal operation, will establish perfect continence during the entire post-operative convalescence. We routinely pass a finger through the surgical fissure produced by the cutting of the pecten band. This is done the day following the operation and every other day until the wound is completely healed. This we believe prevents the coaptation of the cut ends of the band, and promotes healing from the bottom of the wound up. With our series of 105 cases we have only praise for the procedure. It seems to have changed our entire conception of anorectal pathology and treatment. Much better and more permanent results are now obtained than before. It is quite obvious from the above discussion that pectenosis and pec-

tenotomy plays a most important part in a great percentage of common anorectal conditions.

CONCLUSIONS

1. The study of a series of 105 cases of pectenosis and pectenotomy as here presented, corroborates the observations of Miles and Abel.

2. Pectenosis is a common chronic anal condition relieved only by the operation known as pectenotomy.

3. Anorectal divulsion has proven to be unnecessary and is being replaced by pectenotomy in a majority of instances.

4. Pectenotomy is indicated in anal fissure; fistula-in-ano; cryptitis; papillitis; pruritis ani; anal spasm; anorectal constipation; some types of hemorrhoids and in any other anal condition associated with anal tightness.

5. The technic of pectenotomy is described.
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A STUDY OF FOCI IN THE CHRONIC ARTHRITIC

With Comments on the Use of Specific Vaccines

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The study undertaken covers a period of approximately two and one-half years. The material used was taken from 107 patients, all with well-defined chronic joint lesions. These were private patients referred to our laboratories by the family physician solely for the bacteriological study of the foci and the preparation of a specific vaccine if so indicated. Thirty-two were males and seventy-five females. All except

From The Murphy Laboratories.

1. Solis-Cohen, M.: Accentuating Pathogenic Organisms in Culture by Utilizing Inhibitory Influence of Whole Blood. *Brit. J. Exper. Path.* 8: 149-154, 1927.

fourteen were ambulatory and came to our laboratories for the study. Ten patients were seen in the homes and four in hospitals. The age range was from twenty-two to seventy-six years. All walks of life were represented.

Routinely the foci studied were the nose, including the posterior nares, throat, feces and urine. If bronchitis or asthma was present in any of these patients the sputum was examined. In a few a tooth was extracted and this was added to the routine study.

The technique of isolating the specific germ

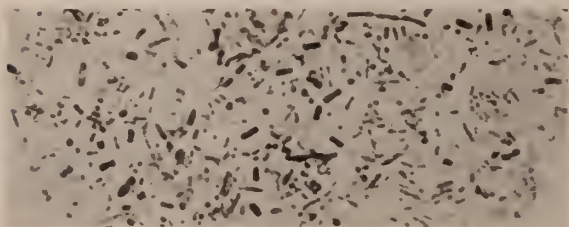


Figure 1. Microphotograph of smear made from original broth culture of feces after 24-hour incubation. Many organisms are seen.

was that outlined by Solis-Cohen.¹ Our vaccines were prepared from the bacteria which survived the action of the whole fresh blood.

The Bacteriological Study of the Foci.

Nose: 100% of the patients, 107, showed a mixed growth from the nose in the original culture. By the pathogen-selective method only fifty, or 47% of these patients showed a growth from the nose. Streptococcus was found in six patients, staphylococcus in 43, and both streptococcus and staphylococcus were found in the nose of one. Four of the fifty showed the nose as the only source of infection.

Throat: 100% of the patients, 107, showed a mixed growth from the throat in the original culture. By the pathogen-selective methods, 84 or 79% showed a growth from the throat. Streptococcus was found in 81 throats, and staphylococcus was found in three. Twenty-four of the 84 patients showed the throat alone as the focal source of infection.

Feces: 100% of the patients, 107, showed a heavy growth from the feces in the original culture but only 26 or 24% showed growth by the pathogen-selective method. Streptococcus was recovered from the feces of seventeen patients, staphylococcus from three, and colon bacillus

from six. Four of the 26 revealed the feces as the only source of infection.

Urine: 61% of the patients, 65, showed a growth from the urine in the original culture, but only 22, or 34% showed a growth by the pathogen-selective method. Streptococcus was found in the urines of eight patients, staphylococcus in 13, and colon bacillus in the urine of one. Two of the 22 patients showed the urine as the only focus of infection.

Briefly, in the original cultures, 65 patients showed growth of organisms from all four foci studied, and all the patients, 107, showed growth of organisms from three foci: nose, throat, and feces. By the pathogen-selective method, 36 patients, or 34% showed growth from one focus only, throat predominating. Fifty-one patients, or 47%, showed growth from two foci, nose and throat predominating. Fourteen patients, or 13%, showed growth from three foci, and three patients, or 2%, showed growth from all four foci. The patients showing growth from all four foci were bedridden and markedly debilitated. Their blood contained no complement.



Figure 2. Microphotograph of smear made from same feces after 24-hour incubation in patient's whole fresh blood. A single strain of streptococci is seen.

Of special interest was the study of three patients, whose original cultures showed growth from all four foci, but no organisms lived in their whole fresh blood. Hence, no vaccines were made for these patients.

The two cuts illustrate microscopic findings before and after the pathogen-selective test.

Specific Vaccines. Specific vaccines for these patients were prepared from the organisms obtained by this method. Eighty-one of these vaccines were standardized to the individuals in our laboratories and the patients were then returned to the physician for treatment.

Twenty-three vaccines with specified dilutions

were sent to the physician without being standardized to the patients by us.

Four patients were turned over to us by their physicians *carte-blanche*, and we were asked to give our vaccine as we deemed fit, and report results. Data concerning the other patients for whom we made the specific vaccines are now being collected from the referring physicians.

The charts of the four patients are presented below:

Miss E. L., Nurse, aged 25 years. Referred to us February 20, 1934, with the following story: Right peritonsillar abscess six years ago. One year later pain developed in right wrist. This pain was periodic until three years ago, when pain developed in both wrists and has been constant ever since. No other joints were involved. At that time both wrists were markedly swollen and deformed, and very painful. She was unable to hold thermometer or to wring dressings from hot solutions.

By the pathogen-selective method, a staphylococcus albus was recovered from the nose, and a streptococcus hemolyticus from the throat. Vaccines were prepared from each organism and were given alternately every 3-4 days until each was standardized to the patient. Then these were combined in the proper proportions and given once per week for one year. At the end of one year, most of the pain had disappeared, and hands and wrists were much stronger. The time interval was lengthened to two weeks, and treatment continued for six months. Then the time interval was changed to once per month. On November 17, 1935, she was dismissed. Her last visit was March 23, 1936. She has no pain, can use hands normally, and is doing all routine work required of nurses.

Mrs. H. E., Housewife, aged 30 years, was referred to us August 22, 1933, with the story that at the age of eighteen she had fallen and injured her right hip. Five months later pain developed in the hip. At the age of nineteen she came to the United States. She

married at the age of twenty-three. About this time pain developed in almost all of her joints. She attributed this pain to our damp climate. She became pregnant in 1928, and all arthritic symptoms disappeared. She was totally free of arthritic pains for eight months after delivery. By the ninth month postpartum, pain developed in the spine, and soon thereafter all joints became involved. She had to give up her household duties because of pain and weakness. At the first visit her feet were so swollen and painful that she had to wear old shoes with many slits throughout. Wrists, knees, and ankles were beginning to show deformities.

By the pathogen-selective method we isolated a streptococcus viridans from the throat. A vaccine was prepared, and she received injections twice per week for eight weeks. At the end of eight weeks the swelling had gone from the feet. All joints were more relaxed, and she had a greater range of motion. The time interval was increased to one week. She became pregnant in March, 1934, and was given an injection once per month until the end of the eighth month. She was delivered in November, 1934. She then returned to us for treatment, December 14, 1934. No symptoms were present, but she was advised to come every two weeks for winter and spring. On June 3, 1935, she was dismissed and instructed to return in the fall. She returned August 8, 1935, with some pain in one toe. She was given an injection every other week for four doses, and then dismissed with instructions to return if symptoms developed. She returned March 26, 1936, because of a little stiffness in shoulders on arising in the morning. She was given one injection.

The baby is now eighteen months old. There has been no return of true arthritic symptoms. She has cared for the baby alone, does all her household duties, and is living a typical normal life of the average housewife.

Mr. M. O., truck driver and buyer for meat packer, aged 35 years. In and out of refrigerator many times per day. Referred to us May 31, 1934, complaining of pain, weakness, and limitation of motion in left shoulder.

TABLE 1. BACTERIOLOGICAL FINDINGS IN FOCI OF TWENTY PATIENTS

Patient Number	Number of Organisms Found in the Original Broth Culture				Number and Kind of Organisms Found by the Pathogen-Selective Method			
	Nose	Throat	Feces	Urine	Nose	Throat	Feces	Urine
2	3	3	Many	0	1 Staph.	1 Strep.	0	0
6	3	2	Many	2	0	1 Strep.	0	1 Strep.
14	2	3	Many	2	0	0	1 Strep.	0
15	3	2	Many	1	1 Staph.	0	0	0
20	3	2	Many	1	1 Staph.	1 Strep.	1 Strep.	1 Strep.
22	3	2	Many	1	0	0	1 Strep.	0
29	2	3	Many	1	0	1 Staph.	0	0
33	3	2	Many	1	1 Staph.	0	0	0
36	2	3	Many	0	0	1 Strep.	0	0
41	2	3	Many	1	0	0	0	0
52	3	2	Many	2	0	0	0	1 Staph.
53	3	2	Many	0	0	1 Strep.	0	0
54	3	2	Many	2	1 Staph.	1 Strep.	1 Staph.	1 B. Coli
74	3	2	Many	1	0	1 Strep.	0	0
86	2	3	Many	2	1 Staph.	1 Strep.	0	1 Strep.
87	2	3	Many	1	0	1 Strep.	1 Strep.	0
89	2	2	Many	0	1 Staph. 1 Strep.	0	0	0
90	3	3	Many	1	0	0	0	0
108	2	3	Many	0	0	1 Strep.	1 B. Coli	0

This condition had been present for three years. He had had to lay off from work occasionally, and had been unable to dress himself.

By the pathogen-selective method, we isolated a staphylococcus albus from the posterior nares. A specific vaccine was prepared, and he was given an injection once per week for two months. The pain had now practically disappeared, and strength was returning to the muscles of the shoulder, hence on August 2, 1934, he was instructed to come every two weeks. On September 27, 1934, he went on a buying trip and returned to us November 11, 1934. His shoulder had given no trouble, but he had developed a slight pain in the left heel, during the past twenty-four hours. He was given an injection and instructed to return when and if symptoms returned. We saw him January 3, 1935, January 10, 1935, March 21, 1935, June 6, 1935, and February 4, 1936. His last visit was March 10, 1936. He is now working every day. Can dress himself and has normal use of his shoulder, with only an occasional pain preceding a storm.

Mrs. J. P. V., Housewife, aged 52 years, was referred to us November 8, 1934, complaining of pain in both knees, both ankles, and the right foot. This pain began four years ago. Three years ago pain began in the left hip, and for the past two years, both hands and wrists have been painful and swollen. She had grown progressively worse, and was unable to do her own housework. Could scarcely get up and down stairs. Was awakened nightly with severe cramps in feet. The grip of the right hand was about 35% normal, and the left about 50% normal.

Staphylococcus albus was isolated from the nose by the pathogen-selective method. Standardization of the vaccine was begun November 19, 1934, and she was given two injections per week for six months. By this time her general condition was much improved and the interval between treatments was lengthened to one week. On July 19, 1935, she reported that she had walked around nine holes of golf. In October, 1935, she was instructed to come every two weeks, and in January, 1936, instructed to come once per month. Last visit, March 26, 1936. She now sleeps all night without cramps, and she negotiates three flights of stairs with ease. Goes on shopping tours for entire day. Is doing all her housework. She was dismissed with instructions to report once or twice per year.

Conclusions:

1. Original cultures may fail to isolate the specific germ in some patients with chronic arthritis, whereas by making use of the pathogen-selective method, the patient's whole fresh blood may inhibit the growth of non-pathogenic bacteria, thus allowing the etiological organism to grow out in pure culture.

2. If no organisms are isolated by the pathogen-selective method, it is probable that said focus is not giving rise to the joint symptoms.

3. Two of the patients whose charts are given

(Mrs. J. P. V. and Mr. M. O.) were given vaccines made only from staphylococcus albus. Both patients made satisfactory recovery. This fact would suggest that organisms other than streptococci may be responsible for some cases of chronic arthritis.

4. Conclusions relative to treatment cannot be drawn from a series of only four patients, but in view of the fact that all four showed a practical return to normal after years of progressing disabilities, we feel justified in recommending the method. Further we feel justified in predicting that if such a study is made, and specific vaccine treatment started early, much crippling deformity may be prevented.

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THE CIRRHOSIS OF THE LIVER AS A SURGICAL PROBLEM

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For the surgeon the cirrhosis of the liver is a greater diagnostic than a therapeutic problem, for the early recognition is more difficult than the therapeutic management. The majority of the cases usually are not diagnosed until after the onset of ascites. Generally the patients suffer for a period of months or years from general abdominal symptoms which are explained in different diagnostic directions; but beginning liver cirrhosis is not thought of, despite the negative outcome of all kinds of tests, especially resultless x-ray examination of the gastrointestinal tract, and such cases are labeled as chronic appendicitis, cholecystitis, colitis, silent peptic ulcer, or any other chronic abdominal disease, until the situation is cleared by the gradual or sudden appearance of ascites.

DIAGNOSIS

The study of 100 cases of liver cirrhosis at the Research and Educational Hospital of the College of Medicine, University of Illinois, and the Ravenswood Hospital, Chicago, revealed the following factors pertaining to diagnosis:

Distribution according to sex, age and etiology, especially alcoholism.—Figures 1 and 2 show that 73% of all the patients with liver cirrhosis

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were male, and that the majority (76%) had an age between 41 and 65 years, the maximum occurring between 51 and 60 (Fig. 1). The causes were alcoholism, lues, cardiac lesions and cancer; only such cases of cancer of the liver have been included which were complicated by the other etiological factors mentioned (Fig. 2). The total number of cases showing abuse of alcohol as the only possible cause, or as a con-

necessary their consultation with a physician. 51% were ill from one to twelve months before the first consultation (Table 2), 18% from one to ten years, and 3% over ten years. Only 9% gave a history shorter than one month. In 13% there was evidence that patients who had "gastric" or "abdominal" symptoms became severely ill when tested by the trial of physical emergency. A common "cold," muscular strain, or sudden alcoholic orgy, previously sustained without any sequels, was sufficient enough to bring about a functional failure of an organism deprived of all its reserve power (Table 3).

Gastric symptoms.—Cirrhosis of the liver does not show, during its stage of development, any typical symptoms. It belongs to that group of diseases which may simulate the symptoms of any gastrointestinal pathology, and can mislead gravely the hasty examiner. 71% suffered from "gastric" symptoms, usually from several, as demonstrated in Table 4.

Respiratory embarrassment.—The frequently occurring circulatory disturbances, such as cardiac lesions, ascites with displacement of the

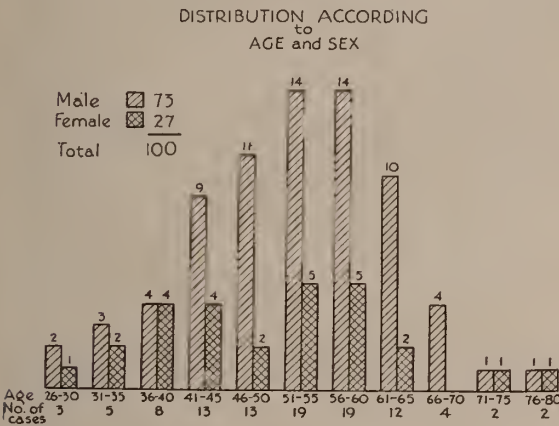


Fig. 1. 76 per cent. of the observed cases of cirrhosis of the liver occurred between 41 and 65 years of age.

tributing factor, amounted to 59, of which 52 cases (or 89.9%) were males and 7 (or 11.1%) were females (Fig. 2). The number undoubtedly would be higher, considering the fact that in 21 cases it was not possible to determine the real etiology because the time of observation was too short. It must also be considered that in some cases of cardiac lesions the abuse of alcohol may be the cause of cardiac disturbances.

Significance of abstinence.—Many of the patients with clinically fully developed symptoms of liver cirrhosis are not subject to abuse of alcohol at the time of the first examination, because they have lost completely their tolerance to alcohol, thus making a virtue of necessity. It is necessary, therefore, to question the patient not only about his present, but also about his past habits. It is possible that, once started, the development of cirrhosis progresses even some time after the cessation of the primary cause. This may explain the failure of many cases to respond to enforced abstinence. Table 1 illustrates this point numerically.

Duration of illness.—Most of the patients complain of general abdominal symptoms for a certain period of time before their illness makes

ETIOLOGICAL DISTRIBUTION ACCORDING TO AGE												
	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	Total
Alcoholism	•	•		•••••	•••••	•••••	•••••	•••••	•	•		34 40
Lues		•	•			•	•					4 6
Cardiac Lesions	•	•	•	•	•	•	•		•			4 9
Alcoholism and Cardiac Lesions			•	•	•	•	•	•				8 9
Alcoholism and Lues		•		•	•	•	•					6 6
Alcoholism and Cancer			•			•						2 2
Alcoholism, Lues and Cancer								•				1 1
Alcoholism, Lues and Cardiac Lesions			•									1 1
Abuse of alcohol denied					•		•	•	•			2 5
Cause not recorded	•	•	•	•	•	•	•	•	•	•	•	11 21
Total	2 3	3 5	4 8	9 13	11 13	14 19	14 19	10 12	4 4	1 2	1 2	100

Symbols in solid type indicate alcoholism

Fig. 2. Etiological distribution of cirrhosis of the liver according to age and sex. ♂ male, ♀ female.

diaphragm, or generalized dropsy, explain that 48% of the patients had respiratory embarrassment. In several cases it was the main complaint of the patients who failed to notice their developing ascites and thus misled the questioning physician. Only by careful physical examination was the real cause found (Table 5).

Circulatory disturbances.—The dilatation of the abdominal veins was not found as frequently

as should be expected from the importance of the "Caput Medusae" stressed so emphatically by the text-books. Among the 15% of cases showing dilated abdominal veins, only few could be characterized by that term. The frequencies of peripheral circulatory disturbances are computed in Table 6. The patients usually observe the swelling of the feet sooner than the ascites because they mistake the latter for obesity. Beginning ascites is very difficult to distinguish, because small amounts of fluid in the abdominal cavity are impossible to recognize by manual examination. The minimum of fluid, necessary for

cases, a few were complicated by a gastric ulcer or cancer.

Herniations.—In 14 cases a rupture in the abdominal wall was recorded (Table 7), half of that number consisting of umbilical hernias; this is contrary to the usual occurrence of hernias in which the inguinal type prevails.

Nervous symptoms.—The changes of hepatic functions, as expressed in disturbances of metabolism or lack of detoxication of injurious substances, do not exist without affecting the nervous system. These appear mostly as subjective symptoms but are very significant in some cases, because they may be the first complaints of the patient. The most frequent are dizziness and fainting spells, but headaches, feeling of weakness, tremors and paresthesias are also observed commonly (Table 8).

Loss of weight.—In 41 cases a significant loss of weight was recorded, which developed in the majority of them within one year. The loss of weight can be compensated by the accumulation of fluid which often brings the weight of the emaciated patient above the highest weight he ever had when enjoying health (Table 9). When there is an insignificant accumulation of fluid, the striking loss of weight, especially when associated with "gastric" symptoms or hematemesis, can easily lead to a diagnosis of malignancy.

Subnormal temperature.—Since the liver occupies an important place among the heat-generating organs, it is obvious that the damage to its tissue will cause a lowered temperature, as was found in 44 cases. In some of these cases it constantly remained below normal. How far below normal such a curve can go is shown in Figure 4. To the man who is accustomed to observing a temperature curve when it is above normal, it is recommended that he turn the figure upside down and then read the curve as a fever-curve, using the numerals on the left margin of the chart.

Low count of red blood corpuscles.—As indicated in Figure 5 most of the cases (61) had less than 4.2 millions of red blood corpuscles, if it is permissible to consider this the minimum level of the normal blood count.

Size of liver.—In 73 cases the liver was enlarged to such an extent that the enlargement was palpable at the time of physical examination (Table 10). It should be noticed, that the enlargement can be recognized in 3 different direc-

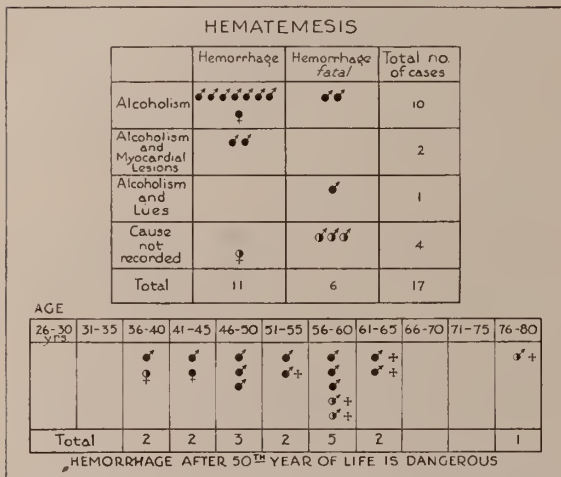


Fig. 3. Hematemesis of patients with cirrhosis of the liver occurred in 17 cases, in 6 of which the hemorrhage was fatal.

its diagnostic recognition, varies with the weight of the patient: a larger amount of fluid can remain undiagnosed longer in obese patients than in thin or emaciated ones.

Hematemesis.—In seventeen cases hematemesis occurred, usually caused by the rupture of dilated lower esophageal or gastric veins. Thirteen of these cases had a record of alcoholism (Fig. 3). The highest frequency was found between 56 and 60 years of age. It is interesting that the six cases which died from anemia caused by hematemesis were all over 50 years of age, which may be explained by changes in the vascular wall: rigidity, deficiency of the constricting musculature (Fig. 3). It is obvious that hematemesis, when occurring in an early stage of cirrhosis, may lead to a diagnosis of gastric ulcer or cancer; it has to be admitted that in several instances of the whole group of the hundred

tions: downward; or to the left and above the umbilicus; or upward, according to the physical constitution of the patient. In the latter case the enlarged liver is hidden in the dome of the diaphragm, so that it protrudes below the costal margin only to the normal limits; however, in such cases, the lower border of the right lung

ducing the formation of a new collateral connection between the portal and systemic veins, or facilitating the drainage of the ascitic fluid either to the outside or to some place in the body which may have greater resorptive power.

The first paracentesis which is done is indicated for diagnostic reasons, or to relieve the patient when found in great distress caused by an excessive accumulation of abdominal fluid, producing displacement of the diaphragm and hence cardiac or respiratory embarrassment, or interference with renal functions. The repetition of the paracentesis is justified only by the poor operative risk to be expected because of the patient's general condition. Otherwise, resort should be taken immediately to a collatero-plastic operation at the time a definite diagnosis is established and when the patient still is able to respond to medical and dietetic procedures, and not after they have failed and the patient's power of restoration has collapsed. Performed at an early stage, the collatero-plastic operations are of no danger to life. It is useless to operate

Temperature curves of three typical cases from a total of 44 cases showing LOW TEMPERATURE

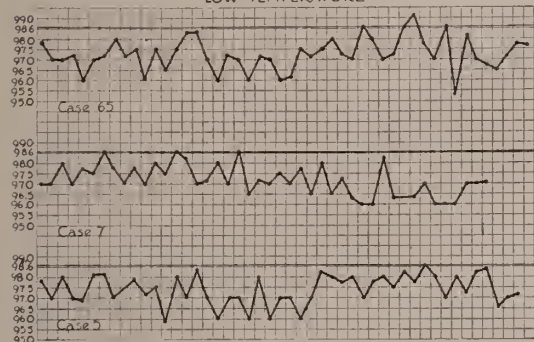


Fig. 4. The temperature of patients with cirrhosis of the liver was abnormally low in 44 cases; by reversing the chart a comparison with a reciprocal fever curve is made.

is found to be unusually high upon percussion and auscultation.

TREATMENT

The treatment of the cirrhosis of the liver has two aims. In the first place, the parenchymal compensation of the liver has to be attained: 1, by a high carbohydrate diet to increase the glycogen storage in the liver because such a liver has a higher resistance to toxic substances and a greater regenerative capacity; 2, by preventing hunger which is injurious to the liver; 3, by a low protein diet, since the power of the liver to detoxicate protein split products is diminished; 4, by abstinence from condiments and alcohol; and 5, by medication with insulin, and by extracts of liver and thyroid. Secondly, the vascular compensation has to be maintained or restored: 1, by an anti-ascitic diet, that is, the restriction of the intake of water and salt (Keith-Smith); 2, by diuretics of the mercurial group as calomel, novasural or salyrgan, assisted by ammonium chloride, and 3, by surgical measures.

There are two types of surgical procedures to relieve patients who suffer from an ascites caused by cirrhosis of the liver: one is the simple paracentesis, and the other any plastic operation in-

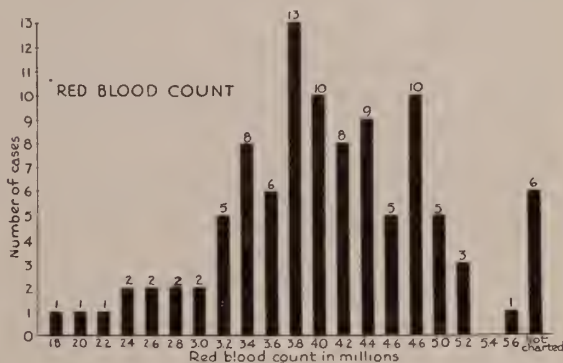


Fig. 5. In 61 cases of cirrhosis of the liver the red blood count was below 4.2 millions.

on patients in moribund condition, or patients close to this stage.

The basic reason for a collatero-plastic operation is the fact that ascites fails to develop in many cases of cirrhosis, because of the congenital existence of a sufficient collateral circulation between portal and systemic veins, or because adhesions form spontaneously in the peritoneal cavity, usually between the omentum and the abdominal wall. In such cases, diagnosis of the cirrhosis of the liver is difficult therefore. The absence of the two factors just mentioned perhaps accounts in the majority of the cases for the development of the ascites. The occasional

failure to produce ascites in dogs by gradually ligating the portal vein in two or more stages proves only the presence of numerous collaterals but not the harmlessness of the obstruction of the portal vein; even though the diversion of a part of the portal blood into the systemic circulation is harmless.

There are different channels of natural collateral circulation between the portal and the systemic circulation:

1. V. umbilicalis—V. epigastrica inferior or superior.

2. V. gastrica sinistra—Vv. oesophageae inf.

3. V. hemorrhoidalis superior (V. mesenterica inferior).

4. V. hemorrhoidalis media (V. cava inferior).

4. Retzius' anastomosis in the retraperitoneal space between the veins of the pancreas, duodenum, colon transversum and the tributaries of the azygos and hemiazygos veins.

The spontaneous adhesions of the omentum, found at the postmortem examination of cases with cirrhosis of the liver, induced the surgeons to stimulate the formation of adhesions by operative procedures.

These operations encourage the development of three different collateral channels by the fixation of the omentum to the abdominal wall or between its layers:

1. V. portae—gastric and omental veins—V. epigastrica superior—V. thoracalis lateralis—V. axillaris.

2. V. portae—gastric and omental veins—V. epigastrica superficialis—V. saphena magna—V. femoralis.

3. V. portae—gastric and omental veins—V. mammaria interna—Vv. intercostales.

The adhesions are the sites of newly developing collateral blood- and lymph-vessels; the adherent areas are naturally excluded from the secretion of fluid into the abdominal cavity, thus diminishing the rate of its formation. Some surgeons speak, in this connection, of the "obliteration" of the abdominal cavity.

Numerous methods have been devised by different authors to establish a collateral circulation or to divert an ascites:

1. *Visceropexy, Omentopexy, Epiploexy:*

(a) The scrubbing of the liver surface and the opposite parietal peritoneum, and their union by several sutures (Talma).

(b) Fixation of the omentum to the inner

surface of the anterior abdominal wall (Drummond and Morison).

(c) Fixation of the omentum between the liver and the ventral abdominal wall and the diaphragm (Turner).

(d) Anchoring of the omentum in the subcutaneous space after its eventration through a middle line incision (Schoenbauer and Narath).

These four methods are used more frequently for the relief of ascites than any other of the following:

2. *Decrease of blood supply:*

(a) Ligature of gastric arteries (Flerow).

(b) Ligature of mesenteric arteries (Mayo).

3. *Venous anastomosis:*

(a) Between V. portae and V. cava inferior, known as Eck's fistula (Franke, Bier).

(b) Between V. mesenterica inferior and V. spermatica interna (ovarica) (Villard and Trautmann).

(c) Between V. mesenterica superior and V. cava inferior (Krestowski and Bogaraz).

4. *The direct diversion of the ascites fluid:*

(a) The drainage into the urinary bladder through an opening in the fundus which brings about the danger of peritonitis, as well as because of the escape of urine into the peritoneal cavity (Dembrowsky).

(b) The drainage into the pleural cavity through openings made into the diaphragm (Roderich, Sievert).

(c) The insertion of foreign bodies, as silk thread, T-shaped rubber tubes, canulas, etc., between the peritoneal cavity and the subcutaneous space.

(d) Diversion into lumbar musculature by removing the lumbar peritoneum (Kalb).

(e) Removal of the lumbar peritoneum and musculature through an abdominal incision resulting in a complete cure of the ascites, but causing a lumbar hernia (Kirschner).

(f) Removal of the peritoneum from the radix of the mesentery in order to make possible a resorption of the fluid by the lymphatics of the mesentery.

(g) The implantation of the proximal end of the severed V. saphena magna into the peritoneal cavity (Ruotte, Gontermann).

Of all these different procedures only Talma's, Morison's, and Schoenbauer and Narath's methods survived. In order to safeguard a good result, the indication for a collatero-plastic opera-

tion should follow as soon as the diagnosis is established and the operation should be performed still during the period of parenchymal compensation of the liver. Besides the decompensation of the liver parenchyma, there are the same general contraindications as for any other laparotomy. The following points have to be observed in performing the plastic operation:

- 1. No tension on the omentum;
- 2. Areas of the omentum, containing large vessels, must come into contact with the subcutaneous tissue (Schoenbauer-Narath) or parietal peritoneum (Talma, Drummond-Morison);
- 3. Prevention of obstruction or thrombosis of the large vessels;
- 4. Prevention of necrosis of the omentum;
- 5. Prevention of herniation.

These requirements are fulfilled by the method devised by the author and published elsewhere.

When the omentum has been transplanted into the subcutaneous space one can judge the success of the operation from the amount of dilated skin vessels around the scar in a few weeks. During that period several paracenteses may be necessary until a successful collateral circulation developed. It must be borne in mind that, even when the ascites is cured, the damage of the liver remains and that the further progress of detrimental changes in the liver is only checked or retarded, depending upon the individual constellation of factors involved. That the future of the patient has to be judged accordingly is obvious.

SUMMARY

- 1. The differential diagnosis of cirrhosis of the liver in its developmental stage is extremely difficult, contrary to the ease of diagnosis when ascites appeared.
- 2. The beginning cirrhosis of the liver causes symptoms which can imitate other diseases: emesis, hematemesis, jaundice, low blood count, respiratory embarrassment, nervousness, loss of weight, etc.
- 3. The history of the patient must carefully be taken because the patient might have abstained from the use of alcohol, the most important cause, at the period of the first examination.
- 4. Only early recognition of the disease and the early performance of a collatero-plastic operation may bring about a prolongation of the life of the patient.

5. Neither surgical nor medical treatment, including abstinence, can restitute the liver to normal conditions; they only either stop or retard further deterioration, which explains the necessity of early recognition of the disease, because it is of little value to the patient to try to stop an irreversible process in a stage that has already progressed far.

TABLE 1. ALCOHOLISM

Total Number of Cases: 59	
Abstinence Again Before Onset of Illness up to:	
1 year	in 7 cases
2 years	in 3 cases
5 years	in 5 cases
10 years	in 1 case
29 years	in 1 case
Total	
17 (28.8%)	

TABLE 2. DURATION OF ILLNESS
(Before first consultation)

Time	Frequency
1- 2 weeks	7
2- 4 weeks	2
1- 2 months	16
2- 6 months	20
7-12 months	15
1- 2 years	6
2- 5 years	7
5-10 years	5
Over 10 years.....	3
Not recorded	19
Total	
100	

TABLE 3. "SUDDEN" SEVERE AGGRAVATION OF CHRONIC "GASTRIC" OR "ABDOMINAL" SYMPTOMS
(By some extrinsic factor)

Cold or "Flu".....	8
Muscular Strain (Lifting).....	3
Great Abuse of Alcohol in One Session.....	2
Total	
13	

TABLE 4. GASTRIC SYMPTOMS
Total Number of Cases: 71

	No. of Cases
Anorexia	31
Pain in Middle or Right Epigastrium.....	29
Belching	11
Nausea	13
Vomiting	21
Gastric Distress After Meals.....	10
Fullness ("Bloated") in Epigastrium.....	11
Flatulence	2
Constipation	14
Diarrhea	2
Jaundice	21

TABLE 5. RESPIRATORY EMBARRASSMENT
No. of Cases

Without Cardiac Lesions.....	33
With Cardiac Lesions.....	15
Total	
48	

TABLE 6. CIRCULATORY DISTURBANCES

Total No. of Cases: 68

	No. of Cases
Ascites	61
Swelling of Lower Extremities.....	38
Swelling of Scrotum.....	13 (of 73 males)
Dilatation of Abdominal Veins.....	15

TABLE 7. HERNIAS

Umbilical	7
Diastasis of the Recti.....	3
Inguinal	4
Total	14

TABLE 8. NERVOUS SYMPTOMS

Total: 37 Cases

Headache	11
Dizziness or Fainting	23
Weakness	12
Tremor or Paresthesia.....	12

TABLE 9. LOSS OF WEIGHT

Pounds	Frequency	Time	Frequency
Up to 10.....	4	Up to 3 mos.....	9
11-20	7	4- 6 mos.	10
21-20	7	6-12 mos.	8
31-40	4	1- 2 yrs.	2
41-50	3	Not recorded.....	12
51-60	2		
61-70	1		
71-80	1	Total	41
Not recorded.....	12		
Total	41		

TABLE 10. SIZE OF THE LIVER

Enlarged	73
Not enlarged	16
Not recorded	11
Total	100

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DISCUSSION

Dr. Warren Cole, St. Louis, Mo.: Dr. Zechel has brought to our attention many instructive and interesting points; some of them are a bit contrasted to the routine text-book teaching, but correctly so. Pathologically, the vast majority of cirrhoses of the liver are of the atrophic (Laennec) type, but not infrequently, cirrhosis is encountered in the presence of a large liver which may or may not be classified as Hanot's cirrhosis. It has often been suggested that cirrhosis of this type is a precursor of the atrophic type, but the indecision and difference of opinion merely emphasize the fact that our knowledge of the pathogenesis of cirrhosis is entirely inadequate. If we knew more about the etiology, treatment would obviously be simplified.

The diagnosis is difficult because the symptoms and manifestations of cirrhosis are so variable. They are similar to the manifestations of so many other diseases in that they consist primarily of dyspepia and mild abdominal pain. As we know, this syndrome may be pro-

duced by any number of diseases, including cholecystitis, peptic ulcer, and even appendicitis. A few years ago we hoped that the various functional tests which were being brought to our attention might be of value in diagnosis of cirrhosis of the liver. They have not been very helpful. Because of the multiplicity of the function of the liver, I would prophesy that they probably will never be entirely satisfactory from the diagnostic standpoint. A few of the tests, like the galactose tolerance test, dye tests and a few others, will reveal abnormal findings in cirrhosis, but so frequently the results of the tests are indeterminate. Even when positive results are obtained, we must still remember that there are other diseases of the liver in which such abnormal results will be obtained. This implies that the tests are in reality tests of functions and not of a specific disease.

Of the operative procedures, I myself prefer that which Dr. Zechel has classified as the Narath operation and which is sometimes known as the Schiassi operation. I do not know which operative procedure Dr. Zechel advises, except that he has offered a slight modification in technic which he unfortunately did not have time to discuss. In the Narath operation, the attachment of the omentum to subcutaneous tissue should allow an absorption of the ascitic fluid by the subcutaneous tissue, as well as encourage the development of collateral circulation. However, if the opening is too loose a hernia will result.

One other feature in the operative line, which might be helpful, in that described by Holman. Two or three years ago he suggested burying the spleen in the tissue beneath the peritoneum of the posterior abdominal wall, thereby setting up a collateral circulation with the caval system. However, I have had no personal experience with the operation.

As Dr. Zechel has stated, the problem of surgical as well as medical treatment of cirrhosis is a difficult one. Omentopexy may at times be very beneficial in the relief of ascites, but very often, indeed, the procedure offers no improvement. Obviously, effort should be made to pick only isolated cases for operation, but unfortunately an accurate approximation of the most suitable cases for operation is not possible.

Dr. George deTarnowsky, Chicago: I think Dr. Zechel is to be doubly complimented, first for the excellent presentation and second, for his courage in bringing up this dismal subject. It has been the bugbear of medicine and surgery. My contribution to his paper will be to show a few slides which describe a fistula which I worked out with Professor Mathews of the University of Chicago and later of Loyola University.

To date I have only been able to try it on one patient, who had had unfortunately a number of paracenteses and a Talma operation. When I attempted to do the operation I ran into such a mass of adhesions that I had to give it up. I think if we get suitable cases we can use it in the human being. It is well worth trying. However, I would advise anyone who wishes to attempt it to first work out the operation on dogs and fresh cadavers. At the Cook County Hospital Professor

Jaffé has been kind enough to give me fresh cadavers on which to do the operation.

Dr. Gustav Zechel, Chicago (in closing): I wish to express my thanks to Dr. Cole and Dr. deTarnowsky for their discussions. The essential fact in the technic of Narath is to protrude a piece of free omentum through the incision and anchor it underneath the skin to the subcutaneous tissue.

There are a few points in the technic advocated in my paper published elsewhere that must be observed: First, avoiding strangulation of the omentum; second, preventing circulatory disturbances in the protruding part of the omentum; third, preventing the formation of a herniation.

A NEW TREATMENT FOR PARALYTIC ILEUS

MATTHEW E. UZNANSKI, M. D.,

CHICAGO

Paralytic ileus is always a grave condition whether the distention is moderate or extreme, or whether it affects part or all of the intestinal tract. It is a disconcerting factor which many times must be met by the most careful of surgeons—operators who make every effort to handle the tissues as little and as delicately as possible, and to apply the minimum of pressure on the bowels when using packs. During the years in which abdominal surgery has become a major specialty various therapeutic agents have been suggested to treat and to abort this condition including enemata of such an obnoxious drug as asafetida.

The alkaloid of physostigmine, eserine, is of value when such a condition follows in the wake of abdominal section or labor. Unfortunately, however, its use here is attended too often by such unpleasant by-effects as slowing of the heart, dyspnea, depression of respiration, bronchospasm, miosis.

In a series of animal experiments, Stedman and his coworkers demonstrated that basically compounds possessing miotic activity are substituted phenylesters of monoalkyl-carbamic acids, and that the activity of such compounds are greatest when the radical is a methyl group, that is a compound similar in structure to eserine. Much work has been done on urethanes of this type. Studies by Aeschlimann and Reinert resulted in the synthesis of the dimethyl-carbamic ester of 3-hydroxyphenyl-trimethyl-ammonium methylsulphate, a compound resembling eserine in many of its characteristics. It

has been demonstrated pharmacologically that the new substance differs from eserine principally by a more pronounced action upon peristalsis, while its effect upon miosis is of little moment, and cardiac by-effects are practically non-existent.

The substance has been made available under the trade name of "Prostigmin." It comes in two concentrations, ampuls delivering 1 cc of a 1:4000 solution for use as a prophylactic against paralytic ileus, and ampuls delivering 1 cc of a 1:2000 solution for treatment of the established condition, as well as for use in bladder atony and in non-surgical cases.

Among the earlier papers dealing with the pharmacology of the drug is that of Rothschild. He found that prostigmin will check the slow decrease observed in the tonus of the isolated small guinea-pig intestine under the influence of papaverine. Under similar conditions, eserine will cause a great variation of tonus which will remain below its initial level, while with prostigmin it will be restored almost to the normal point.

Bross and Kubikowski observed that a 1:7,000,000 solution of prostigmin causes a slight contraction of the excised rabbit or guinea-pig bladder. A concentration of 1:1,400,000 causes a strong and prolonged contraction of the bladder.

In the neighborhood of 125 papers have so far appeared in the literature concerning the use of prostigmin in clinical application. The greater number of these refer to its use post-operatively for paralytic ileus, some to its effectiveness in bladder atony, and a few to its use in medical cases. In the recorded cases the 1:2000 solution was employed. Recently the drug has been recommended for prophylaxis against paralytic ileus. For this purpose a 1:4000 solution is employed, the contents of an ampul being injected every 6 hours, starting the day before surgery and continuing until the second or third postoperative day.

Bardenheuer uses prostigmin for the relief of postoperative intestinal atony and also as an effective treatment in chronic obstipation. Beck reports the use of the drug in 220 cases. He found prostigmin to have a marked effect upon the intestine but to be without influence on the heart. In some cases he uses the drug every second day as a prophylactic and to maintain peris-

talsis. Bross and Kubikowski report seven cases in which the drug was effective in postoperative retention of urine.

de Saint-Georges uses prostigmin in postoperative intestinal atony and also in purely medical cases. Gaenssle states the drug is without the unpleasant effect upon the heart common to eserine. Junet reports the use of prostigmin in 200 cases without observing any by-effects. Mueller uses prostigmin in cases of disturbed intestinal function following abdominal operations, in generalized peritonitis, and in intestinal paralysis following parturition or abortion. He states that a distinct intestinal stimulation is noted in about 20 minutes after the drug is administered. Saegesser states that the absence of by-effects makes prostigmin particularly suitable for use as a prophylactic to lessen the danger of postoperative intestinal atony. He reports the use of prostigmin in both surgical and non-surgical cases and points out that not even in cases of diffuse peritonitis has he ever observed any changes in blood-pressure or pulse rate due to the drug. Schwerk states that prostigmin has always given satisfactory results and he has never observed any ill-effects on the heart or central nervous system. His reported cases include operations of adnexal tumors with adhesions, cystomas, deliveries by Cesarean section, tubal pregnancies, rectovaginal fistulas.

We now wish to report a series of cases in which prostigmin was given both pre- and postoperatively. Our routine preparation in gynecological cases includes a laxative 36 hours before surgery. Fluids—gruels are pushed up to within 3 hours before operation. Saline enema is given. Sedation is procured by means of an opiate and a barbituric acid derivative. The contents of an ampul of prostigmin is given one hour before operation. Postoperative care includes an enema, 1000 cc, immediately upon return from the surgery. Fluids by mouth are given ad libitum, particularly plenty of sugar-loganberry juice. If necessary, glucose, 25 Gm, in physiological saline is given intravenously. Prostigmin is given as required.

The following represent typical cases:

M. L. Male. Fractured pelvis. Troubled with gas in bowels. Prostigmin given in conjunction with oral laxation. Excellent results.

L. K. Female age 8. Fractured skull. Prostigmin used at sign of distention with good results.

E. W. Female. Subphrenic abscess with intestinal distention. Prostigmin medication attended with good results. Patient later died of bacteriemia.

Mrs. R. Female. Fibroid uterus. Complete hysterectomy done. Prostigmin used 30 minutes before operation. Intestine flat easily kept out of operating field. Prostigmin also employed postoperatively when necessary for distention. Made a very good recovery.

Case X. Referred. Female. Intraligamentous fibroids. Hysterectomy done. Did not receive prostigmin preoperatively. Severe distention on third postoperative day. Prostigmin used as required. Attended with good results.

Case Y. Referred. Gangrenous appendix. Appendectomy done. Prostigmin given postoperatively with good results.

J. S. Male age 15. Gangrenous appendix. Appendectomy done. Prostigmin given postoperatively with good results.

OBSTETRICAL CASES

Mrs. M. D. Para one. Developed whooping cough 30 hours before delivery. Troubled with gas. Enemata and oral laxatives used. Later prostigmin given with excellent results.

Mrs. B. W. Para O. Troubled during pregnancy with gas belching. Prostigmin given with good results. Difficult forcep delivery with second degree tear. Troubled with gas after delivery. Excellent results following administration of prostigmin. Patient asked for injections for relief of distention.

Mrs. W. S. Hyperemesis gravidarum. Disturbed by distention before delivery. Prostigmin relieved distention and had no effect upon the uterus. Forcep delivery.

Mrs. E. F. Age 25. Para one. Past history of scarlet fever, diphtheria and influenza. Entered hospital with cold, sore throat, and running nose. Temp 100°. Physical Exam.: Hgt. 64 inches; Wgt. 114 lbs.; Musc. Devl.—good; eyes, ears, nose, heart, lungs, extremities, breasts—negative; thyroid—palp. Pelvic Measur.: Intrap. 26 cm; Intercr., 29.5 cm; Troch., 32 cm; Ext. Conj., 20+ cm; Cd., 9+ cm. Gas pains. Good results followed administration of prostigmin, as required.

Mrs. H. M. Aged 29 years. Para two. Past history of general diseases of childhood. Physical Exam.: Musc. Devl.—good; eyes, ears, heart, lungs, extremities, orthopedic deformities, breasts—negative; tonsils—hypertrophied; thyroid—somewhat enlarged. Pelvic Measur.: Intrap. 26 cm; Intercr., 28.5 cm; Troch., 30.5 cm; Ext. Conj., 19.5 cm; Cd, 9.5 cm. During pregnancy blood pressure 126/80; 126/80; 128/80; 132/86; 134/88; and near term 168/112; 180/120. Urine at first negative then traces of albumin, and 2+ albumin, and near term 2 to 3+ albumin with casts, and 4+ albumin, with casts. Because of high blood pressure and urine findings Cesarean section was done in order to prevent convulsions and to get a living baby. Application of prostigmin attended by satisfactory results.

Mrs. E. A. Age 29. Para one. Past history—negative. Physical Exam.: Hgt. 58½ inches; Wgt. 102 lbs.; Musc. Devl.—good; eyes, teeth, heart, lungs,

extremities, orthopedic deformities, breasts—negative; tonsils—congested; thyroid—not palp. Pelvic Measur.: Intrasp. 25 cm; Inter-cr., 26 cm; Troch., 29 cm; Ext. Conj., 17 cm; Cd., 7.5 cm. Contracted flat pelvis. Blood pressure 128/70. Cesarean section. Prostigmin given 30 minutes before operation, not troubled with distended gut. Postoperatively, when patient complained of tightness in abdomen, Prostigmin given with relief following in 20 to 30 minutes.

Summary. Prostigmin is a new synthetic substance recommended as a prophylaxis against paralytic ileus, as a treatment for the established condition, and in cases of bladder atony. It is the dimethyl-carbamic ester of 3-hydroxyphenyl-trimethyl ammonium methylsulphate. It is available in two concentrations, ampuls delivering 1 cc of a 1:4000 solution for prophylaxis, and ampuls delivering 1 cc of a 1:2000 solution for treatment.

We have applied the drug pre- and post-operatively in a series of cases, of which 13 typical reports are given.

Our results indicate that prostigmin is of value both as a prophylactic against and a treatment for paralytic ileus and distention.

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THE TREATMENT OF TRACHOMA IN SOUTHERN ILLINOIS

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The treatment of trachoma in clinics in general is not ideal nor as satisfactory as in private practice. There are many factors which compel one to modify treatment in southern Illinois to suit individual circumstances. Chief among these factors is the economic status of the patient.

Of a total of 933 cases treated the first year of the clinics only 329 of the patients were self supporting and the remainder were dependent upon some form of charity. The average income of the self supporting patients was \$10.05 per week for the entire family that averaged 4.63 individuals.

Trachoma is most prevalent and most neglected in the hill people of southern Illinois. Many of these people are prejudiced against medicine. They have had little contact with the medical profession during the past, and have an ingrained suspicion of strange doctors and nurses. Their confidence has to be won gradually.

Some have the belief that the disease is a curse or a natural affliction present in grandparents and parents and that medical interference with nature is presumptuous.

Many who live in small towns are also affected but the most active and infectious cases are seen in the hill people and among the coal miners and these constitute a continual source of dissemination of this disease.

Even among the more intelligent and those willing to undergo treatment, distances to the clinics are often so great that the entire day is required for one visit to a clinic. Combined with this there are seasons during which the more isolated people are literally mud-bound. Even then many travel over roads which you and I would consider impassable. High water is a factor along the river bottoms.

The treatment of trachoma is a prolonged process requiring from one to four or five years, and constant attention is necessary.

Those people on the border line of relief must

Read before Section on Eye, Ear, Nose and Throat, Eighty-sixth Annual Meeting, Illinois State Medical Society, May 20, 1936.

earn a living working in the coal mines when these are operating, on farms, or at odd jobs. It is often impossible even with the best intentions for them to be treated without interruption. All this tends to lengthen the course of the disease.

Various forms of treatment of trachoma have been used. Among the most common are:

Copper as the stick, in ointment form, or in glycerine.

Silver usually as a solution; the stick has been used.

Alum crystal, lead acetate, bichloride of mercury, protargol, and other organic silver compounds.

Massage with boric acid crystals or powder.

Carbondioxid snow, ultra violet light, x-rays, radium, and many others.

As yet there is no specific treatment, but certain forms of treatment give better results than others.

Copper sulphate, the oldest form of treatment and probably the one most widely used, dates from the days of ancient Greece. Experience has proved it efficacious, but it requires a long time. It is painful and there is always the danger of a burn of the cornea if the stick comes in contact with it when the application is made.

This form of treatment, because of danger to the cornea, long duration and the severe reaction some patients get from its use, is not being used in southern Illinois.

Chief experience in trachoma treatment in southern Illinois has been with chaulmoogra oil. Approximately 1,000 cases were so treated.

Treatment at the clinics was given three times a week.

A local anesthetic of 2% butyn was instilled, two drops in each eye, a few minutes apart. Approximately 5 minutes later cotton wound applicators dipped in clear chaulmoogra oil (warming usually removes cloudiness) are rubbed on the conjunctiva of the lids and fornices including the caruncle, until saponification takes place. This is denoted by a foamy appearance of the oil.

After this thorough but gentle massage the eyes are irrigated copiously with normal saline solution.

Combined with clinic treatment, the patient uses, at home, an eye wash of mercury oxycyanide 1-5,000 three times daily applied by means of an eye cup.

In the acute stage or during acute exacerbations the medical treatment is that of any acute conjunctivitis.

Pannus usually recedes with improvement of the conjunctiva, but if it is thick and not succulent it is also massaged. Atropine is used if the pannus is fresh and succulent and gives rise to irritation of the iris and ciliary body.

Infiltrations of the cornea require atropine, heat, dark glasses and mild anesthetics if photophobia is marked. Ulcers are treated in a similar manner.

The rationale of the above form of treatment is not understood as yet. Whether rubbing alone is sufficient, since favorable reports from rubbing with saline on cotton, the glass rod, et cetera, are given is not known. Upon the other hand saponification has a favorable effect. The purpose of mercury oxycyanide is to prevent and combat secondary infection.

It was noted that acute symptoms such as blepharospasm, photophobia, hyperemia and secretion decreased under treatment within 2 to 3 weeks, but hypertrophy would remain a variable time.

In mild cases the hypertrophy may disappear within 6 months, while in severe cases it may require from a year to several years.

Vision would improve and the involved cornea begin to clear along with subsidence of acute symptoms. In uncomplicated cases from 6 months to a year or two were required before activity ceased. Resultant scarring was minimum and soft.

Approximately two years ago at the request of Dr. Gradle a form of treatment with quinine bisulphate described by Selinger a short time before at the Chicago Ophthalmological Society was tried with some selected cases in southern Illinois clinics. Cases selected included a number of very severe trachomas that had been under treatment many months with little improvement.

In these cases chaulmoogra oil treatment and oxycyanide home treatment were discontinued and patients were placed upon quinine bisulphate alone excepting those who had corneal involvement, in whom atropine was also used. In addition to these cases some most severe active new cases were placed upon this treatment. Altogether 40 cases were put upon quinine bisulphate.

The rationale of this treatment¹ is that quinine besides being an astringent is a bactericide, is a protoplasmic poison, and because it is an alka-

loid, penetrates deeply into the tissues upon being applied locally to mucous membranes. It destroys pathological accumulations of lymphoid tissues by its action as a protoplasmic poison and this same property inhibits new invasions of the tissues by cellular elements.

The technique of quinine bisulphate treatment is as follows:

The patient is given a local anesthetic as for chaulmoogra oil, after which, cotton wound applicators dipped in 10% aqueous quinine bisulphate solution are applied to the everted conjunctiva. One applicator is used on the upper fornix and upper palpebral conjunctiva, another applicator on the lower fornix and lower palpebral conjunctiva. The application is made with a firm rolling movement until the conjunctival surfaces turn a bluish milky color. The plica semilunaris must be similarly treated. Of course, as in massage with chaulmoogra oil, in applying the solution to the upper fornix and lid conjunctiva, the patient is directed to look down, while he should be directed to look up when the application is made to the lower fornix. These applications are made three times weekly.

Cold compresses to the eyes immediately afterward relieve the burning sensation which follows.

In addition to the clinic treatment described above a 4% quinine bisulphate ointment is prescribed for use at home twice daily, just before retiring and upon arising. It is well at first, until the patient becomes accustomed to the burning sensation, to use a 2% ointment.

If pannus, corneal infiltration or corneal ulcer is present, atropine, hot compresses, dark glasses and possibly some anesthetic should be used in addition to the quinine solution and ointment which are continued in spite of corneal complications. In fact the latter are benefited by the use of quinine.

Surgical measures are used in conjunction with the above as with any other form of medical treatment of trachoma.

Among the substances with which quinine is incompatible are mercury, lead, zinc, copper and their compounds, iodides, bromides, alkalis, tannic acid, ammonia and lime water.

Among the synergists are arsenic, iron, and mineral acids.

Under this treatment, within a week to two weeks acute symptoms subsided. Vision im-

proved markedly. Hypertrophy remained in some cases a year, while in others it disappeared within 6 months. A few cases discontinued treatment and several did not improve. Upon the whole the results were gratifying.

Regardless of the type of medical treatment employed, expression and grattage of follicles is indicated because it hastens recovery. Frequently elimination of a nest of follicles in the upper fornix and expression of the region of the plica will mark the beginning of recovery of a case of long standing.

Grattage with the edge of the knife, expression of the plica, and that part of the fornix not accessible to the knife, followed by firm but gentle wiping with dry gauze, gives good results.

Sequelae resulting from scar tissue formation as trichiasis, demand surgical intervention in order to derive benefit from any form of medical treatment. And this treatment is to be carried on until all evidence of activity has disappeared. Even after this it is advisable to continue treatment at less frequent intervals for from 6 months to a year, followed by observation.

Many patients in the trachoma clinics are old cases with activity from 10-20 years or longer and for that reason sequelae are common. Entropion and trichiasis constitute the majority of the sequelae. And among surgical measures usually employed are the Hotz.

In this procedure,⁶ under local anesthesia, after a hard rubber plate has been placed beneath the lid an incision is made along the entire length of the lid 3 m.m. above and parallel with the border. Lying exposed in the wound are the reddish fibers of the orbicularis muscle parallel with the edge of the lid.

After the skin has been freed downward for a short distance and upward to the upper border of the tarsus, the fibers of the muscle are lifted up at the one end with forceps and excised in a breadth of approximately 4 m.m. to the other end of the lid with the scissors applied flat. This frees the entire surface of the tarsus which should be dissected free of all tissue.

In most cases of trachoma the tarsus is several m.m. thick, is firm in texture and curved convexly forward.

A sharp scalpel is entered somewhat below the upper margin of the tarsus and parallel with its plane and with a sawing movement downward thin slices are cut away. The upper portion of the tarsus is not thinned unless it prevents good

eversion of the lid margin. Meller advises a furrow in the anterior surface of the tarsus made sufficiently thin so that after the sutures are applied the lid margin is easily turned out, leaving the lower margin of the tarsus untouched. It is frequently necessary, however, to remove the lower one-third to one-half of scarred tarsus entirely down the conjunctiva in order to evert the lash line.

A double armed suture is passed through the upper border of the tarsus in a horizontal direction and the skin margins directly above and below are then included in this suture. Four such sutures are taken, evenly spaced. Good approximation upon tying sutures helps eversion. A simple vaseline dressing is applied.

The modified Ewing operation is a reconstruction of the lid for the correction of trichiasis and entropion. The incision is made in the region of Arlt's streak on the conjunctival side 3 m.m. from and parallel with the border of the lid, and continues through the entire tarsus.

The lower portion of the divided tarsal plate is everted 90 degrees and held in place by sutures thus placing the two parts in a "T" formation. Because of the many steps in this procedure it will not be described in further detail.

The method of Spencer Watson for correcting trichiasis limited to the region of the external canthus gives good results and is not mutilating as in excision.

In this procedure an intermarginal incision is made the length of the affected area and a cut made in the skin of the lid, 2 m.m. distant from and parallel with the margin. By turning downward the lid margin, the cutaneous incision is made to terminate at the canthus and join the intermarginal incision. In this way the cilia are contained in a flap, the base of which lies away from the canthus. A second skin incision 2 m.m. above and parallel with the first, is made, forming another flap, the base of which lies on the side of the canthus and, of course, above it. The flaps are undermined and exchanged, the flap bearing the lashes moved above, while the upper flap is placed at the margin of the lid. The flaps are held in the new positions by sutures passing through their angles, and within a few days permanent union takes place.

Fine hairs of the flap cause very little or no irritation as the cornea seldom reaches this area.

In cases of trichiasis and entropion in which the tarsal plate is too small to be used for anchor-

age of sutures, as is done in the previously described operation, mucous membrane grafts are used.

Cases of spastic entropion are corrected by means of the Gaillard suture.

Persistent lacrymation and blepharospasm which would not improve upon any medical treatment or during a rest from all medication, frequently responded to a canthoplasty.

Other minor surgical procedures resorted to will not be described in this paper.

To recapitulate: The treatment of trachoma is a long drawn out one. It requires complete cooperation of the patient and this may be a matter of educational campaign, improvement in economic status, the building of good second- and roads, and other obvious factors.

Treatment definitely does help. In our hands many persons were able to resume their duties in the fields, mines and homes, after several months' treatment.

Chaulmoogra oil is well suited for treating a large number of cases. It is simple to apply, it is safe and it gives uniformly good results with little scarring.

Quinine bisulphate is efficacious and has the advantages of beneficial effect upon the involved cornea.

Judicious surgery in certain active cases shortens the period of treatment, and in old cases with sequelae ends years of discomfort and pain with full restoration of all remaining function of the eye.

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DISCUSSION

Dr. D. C. Orcutt, Chicago: As I attend medical conventions here and there, it is with a great feeling of satisfaction that I see our boys appearing prominently on the program. By our boys, I refer to former interns, house surgeons and assistants of the Illinois Charitable Eye and Ear Infirmary.

I congratulate Dr. Lenzen on his careful and exhaustive report on trachoma conditions existing in

Illinois, and the marked improvement there has been in the care of these poor people, so handicapped by disease and environment. He and other speakers have so thoroughly covered the subject, as we now see and care for the disease, that I am sure it will be permissible for me, instead of attempting to criticise or offer suggestions on present day conditions and treatment, as so ably presented, to digress into the past, and I will ask you to go back with me to my pre-medical days and from there go along with me for a few years early in this century.

Before doing this, however, I want to mention briefly the disease conditions from which it is necessary to differentiate trachoma: follicular conjunctivitis, vernal catarrh, tuberculous and syphilitic, Paranaud's disease. I will mention only briefly follicular conjunctivitis, with its pronounced nodules but absence of corneal involvement and vernal catarrh, with its seasonal exacerbation and absence of corneal involvement.

My birthplace was Coles County, this being the last county of the great corn belt, and the adjoining counties south were known as Egypt, where hard pan was said to come up to the second rail in the fence. This was long before oil was struck along the National Road, and the people lived in conditions of "poverty extremis"—corn pone, molassas and sowbelly being their chief means of sustenance. The principal source of revenue was to go up north—to Coles, Douglas and Champaign counties—to work. All of our help, both outdoors and indoors, came from down there. When broom-corn cutting time came there was a complete exodus from the counties south to the Mecca up north. They came literally by thousands, and my boyhood recollections were that a very large percentage came with sore eyes. If the condition bore a scientific name, which I doubt, it was invariably termed granulated eyelids. No treatment whatsoever was thought of or given. Washing promiscuously, as they did, and using the same inadequate towels, we can readily understand the chance of inoculation. My father contracted the disease, and during many years of his life had greatly lowered vision from its ravages.

Is it any wonder that after studying medicine and, almost immediately after graduation, receiving an appointment at the Infirmary, there was one disease that seemed more familiar than any other? I unconsciously drifted into the care of these poor patients who were sent in by the supervisors of the counties in the southern part of the state. For years they addressed me by my first name, having known me as a boy, working for my family in harvest time, and in later years meeting me yearly when I went into their country to buy mules.

At that time we were not doing much surgery at the Infirmary, and what we did was mostly the Hotz lid operation as originated by that sainted gentleman late in the last century. His name will live for his first efforts to relieve this terrible disease. Gradually we began the more major work, and the dissection of the cicatricial cartilage became common. In an old case when the tarsal cartilage was drawn and contracted, all mucous membrane destroyed, the pannus

extending over the cornea, the operation was a God-send and the relief almost unbelievable. This was coupled in most cases with a broad canthoplasty. The pressure was removed from the globe, the pannus contracted, and pupillary iridectomies gave fairly useful vision. Peritomy was tried cautiously, but whether it ever proved a success I am unable to state. After the symptoms had subsided, cataracts were removed, and usually successfully. I do not recall a single instance of loss by infection, possibly because such eyes are impervious to the usual infective processes.

Under this regime at the Infirmary, the predominating class of cases dwindled into an almost negligible class, and now, thanks to the advancements in science, the fact that men are going into that country to meet the condition at its source and the gradual education of the class of individuals who have been its victims, this dreadful disease is gradually losing its serious aspect and we may hope to see it wiped out entirely.

HYPOGLYCEMIC STATE IN TREATMENT OF SCHIZOPHRENIA

Bernard Glueck, Ossining, N. Y. (Journal A. M. A., Sept. 26, 1936), states that the evidence is far from conclusive that the effects of the hypoglycemic state and of the insulin shock in patients with schizophrenia is something specific to this form of disorder. The average patient's reaction to this sudden deprivation of the organisms of its sugar content has much in it of the nature of a profound organismal and personality disintegration. No other form of psychiatric therapy requires as much care, skill and caution in its application as does this. Four deaths have been recorded in connection with the treatment, three in Vienna and one in Switzerland, but it is impossible to state with accuracy what percentage this constitutes of the total treated. While undergoing the treatment, the patients appear to be in fine physical condition, usually gain weight, and, aside from a slight sense of fatigue, do not complain of physical discomfort during the time when they are not in the hypoglycemic state. The object is to achieve a progressive insulinization of the patient through the intramuscular administration of daily increasing doses of insulin until the so-called shock dose is attained.

CHOICE OF ANALGESICS

R. W. Waggoner, Ann Arbor, Mich. (Journal A. M. A., Sept. 26, 1936), states that aminopyrine has been most severely indicted for its supposed cause of agranulocytosis. There are still many who are afraid to prescribe this splendid analgesic because of the possibility of harm resulting from its use. The property of producing agranulocytosis may be due to the benzene ring, but many cases of industrial benzene poisoning have been noted without agranulocytosis. It is logical to believe that there may be an idiosyncrasy to the drug, just as there is to many other valuable drugs. It should not be discarded because of the unfortunate reaction in a few cases. Similar criticism of the use of cinchophen and neocinchophen has been raised because this drug is presumed to cause liver damage. Studies on experi-

mental animals have not proved that these drugs have a constant specific liver toxic effect even when given in doses far in excess of the therapeutic dose. An analysis of the literature would indicate that these drugs may be prescribed safely when a proper indication for their use exists. Many of the barbituric acid derivatives have been used for the relief of pain. The high comparative dosage of these drugs necessary for analgesic action makes their routine use for such purposes inadvisable. Sensitization to acetylsalicylic acid is said to be frequent among allergic persons. Placing a small bit of the drug on the tongue and allowing it to dissolve will produce itching, cough or asthma in a short time in sensitized persons. The physician should recognize first of all the temperament and personality of his patient and, secondly, the situation, type and severity of the pain, and he should prescribe his analgesic medication accordingly. The narcotic should be used rarely and only in emergency situations, not in those cases in which analgesic medication may be necessary over a long period.

CYANOSIS IN THE NEW BORN

The most common causes of cyanosis (E. A. Morgan and Alan Brown, *J. A. M. A.*) in the new born are: (a) aspiration of mucus and (b) atelectasis. Morgan and Brown consider these two factors conjointly because in a vast majority of cases atelectasis is the result of the plugging of the sections of the bronchial tree with the aspirated mucus. This complication can be prevented by the careful removal of the pharyngeal secretions before the child's first inspiratory effort. For this purpose do not use coarse gauze because it traumatizes the delicate buccal mucosa of the child. (When gauze is used we can reach only as far as the faucial region.) A properly curved metal suction tip should be used. Suction should be continuous and the force should be only moderate in order to avoid injury to the uvula and other soft structures.

Other causes are: prolapse of the cord or cord around the neck; prolonged difficult labor; breech presentation with difficult delivery of the after coming head; cerebral edema and traumatic intracranial hemorrhage.

When a child becomes cyanotic during the first few weeks of life tetany should be suspected. The other symptoms associated with tetany are: convulsions, twitchings and low blood calcium. These cases respond to calcium therapy.

FOUR O'CLOCK FATIGUE

It is generally conceded that the morning is the time most conducive to good work whether it be physical or mental. At noon we pause—and should relax—while we stow away a little provender to replace the fuel that has been utilized in the forenoon's activity.

After getting under way again, it is the customary experience to find a tendency to earlier slowing down of work than before. Along about 4 o'clock there is a perceptible lagging of effort. In the hot Spanish-speaking countries of the western hemisphere, a *siesta*

is observed which affords recuperation through an afternoon nap.

The four o'clock coffee habit of the Scandinavians and the Englishmen's afternoon tea are also excellent means of coping with this afternoon fatigue. In this country there is a tendency to popularize the cocktail hour, which, however, is far less satisfactory. Something should be done, however, to promote a properly observed 4 o'clock pause.—*The Journal-Lancet*.

AUTOTRANSFUSION IN TREATMENT OF WOUNDS OF HEART

Charles M. Watson and James R. Watson, Pittsburgh (*Journal A. M. A.*, Feb. 15, 1936), used autotransfusion to combat the excessive loss of blood resulting from a stab wound of the heart. As far as they can determine by a review of the literature, this is the first time autotransfusion has been used in the treatment of this type of injury. In view of its marked success in this instance, they believe that it should receive further trial as an adjunct to cardiorrhaphy in those cases in which the loss of blood is sufficient to threaten the immediate survival of the patient. The patient returned for an examination four months after discharge from the hospital, stating that he felt fine and was working again. The chest was essentially unchanged except for some improvement in the deformity, and a roentgenogram showed thickened pleura but normal heart and lung shadows. An electrocardiogram was negative.

SODIUM CITRATE: SPIROCHETICIDE

Dr. R. S. Leadingham, Atlanta, Ga., *Journal of Lab. and Clinical Medicine*, St. Louis, June, 1936, says:

While preparing for darkfield examination a rather thick cover glass specimen from a laryngeal lesion of Vincent's angina, containing many pus cells and a bacterial flora consisting mainly of myriads of Vincent's organisms, Leadingham observed that the addition of a drop of a 2 per cent solution of sodium citrate caused immediate cessation of movement of the spirochetes and apparently eventful dissolution. Repeated examinations gave the same results. Later the same solution was applied to the surface of the ulcer from which the specimen had been taken. Ten minutes later no Vincent's organisms were found. None were present the next day or the day following, when the patient was dismissed.

WASHINGTON SUPREME COURT RULES THAT CHIROPRACTORS CANNOT CLAIM BASIC SCIENCE ACT EXEMPTION

The action at issue, which recently came before the Supreme Court of the State of Washington, was on an appeal from the King County Superior Court, wherein a chiropractor, not licensed as such in Washington (and not eligible to chiropractic licensure, unless previously qualified through a basic science certificate), claimed, among other contentions, that to require him

"... to pass an examination in subjects (those of basic science; anatomy, physiology, chemistry, pathology, and hygiene), which have no relation whatever

to the functions of chiropractic healing, would be a denial of liberty and of due process of law and, therefore, unconstitutional and void."

The opinion of the Supreme Court state:

"... it cannot be doubted that no one has a natural or absolute right to practice medicine or surgery, and that the state may, under its police power, regulate within reasonable bounds, for the protection of the public health, the practice of medicine and surgery by defining the qualifications one must possess before being licensed to practice the same; and that a chiropractor is deprived of no constitutional right by being required, before receiving a certificate to practice his profession, to have adequate knowledge of the subjects laid down by the statutes of this state."

A man entered the waiting room of a hospital. His head was enveloped in bandages.

"Are you married?" asked the doctor.

"No," replied the man. "I've been run over."

Society Proceedings

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Wednesday, November 18, 1936

PROGRAM

"The Operating Room Diagnosis of the Gall Bladder."

Ralph C. Sullivan, M.D., F.A.C.S.

Clinical Professor of Surgery,

Loyola University School of Medicine.

"Liver Deaths" and the Complications of Gall Bladder Surgery.

Charles Gordon Heyd, B.A., M.D., F.A.C.S.

Professor of Surgery, New York,

Post Graduate Medical School.

President, American Medical Association.

Regular Meeting, Wednesday, December 2, 1936

PROGRAM

Allergy in Childhood.

I. Harrison Tunpeper.

The General Treatment of Allergy.

Harry Huber.

The Importance of the Recognition of the Minor Allergies.

Milton B. Cohen, Cleveland, Ohio.

Discussion opened by

Frank L. Foran.

DISTRICT MEDICAL SOCIETY OF CENTRAL ILLINOIS

*Joint meeting with Decatur Medical Society and Staff
of Decatur and Macon County Hospital,
Decatur, Ill., November 17*

MORNING SESSION

Decatur and Macon County Hospital

Operating Clinics

Dr. E. C. Roos, Pelvic Laparotomy-Spinal

Drs. E. P. McLean and D. D. Smith, Caesarian Section-Local

Dr. Ray Tearnan, Pelvic Laparotomy

Dr. E. C. Roos, Gall Bladder-Spinal

Dr. C. Rich, Common Duct Stone

Dr. Louis J. Hirschman, Detroit Rectal Operative Clinic
(Mr. D. G. McCurdy of Chicago will demonstrate Cyclo-Propane Anaesthesia)

Out Patient Clinic

Dr. W. Stuart Wood, Orthopedics.

Complimentary luncheon by the Decatur and Macon County Hospital in the Nurse's Home.

AFTERNOON SESSION

Auditorium of the Macon County Tuberculosis Sanatorium

Business meeting of the Central Illinois District Medical Society.

Diagnostic Clinic—Dr. Louis J. Hirschman, Detroit.

Clinical Pathological Conference

(1) Carcinoma of the gall bladder—Drs. Woodward, Rich, Stanley and Melnick.

(2) Carcinoma of lung—Drs. Mertz, Jack, Lindberg and Melnick.

Discourse—Dr. Karl A. Meyer, Chicago.

EVENING SESSION

Orlando Hotel

An informal reception for the guests will be held by the Decatur Medical Society.

Dinner.

Scientific Addresses:

"The Erroneous diagnosis of 'colitis,'" Dr. Louis J. Hirschman, Professor of Proctology, Wayne University College of Medicine, Detroit, Michigan.

"Surgery of the Colon," Dr. Karl A. Meyer, Medical Director Cook County Hospital, and Associate Professor of Surgery, Northwestern University Medical School, Chicago, Illinois.

SOUTHERN ILLINOIS MEDICAL ASSOCIATION

Meeting, November 12, Murphysboro, Ill.

PROGRAM

Address of Welcome—R. B. Essick, M. D., Murphysboro.

Report of Two Caesarian Sections—F. B. Hiller, M. D., Pinckneyville.

Brief Mention of Several Unusual Cases—Dr. Flint Bondurant, Cairo.

Low Cervical Caesarian Section with lantern slide demonstration—Dr. W. C. Scrivener, E. St. Louis.

Fracture of Middle Third of Clavicle—Dr. H. I. Stevens, Tamaroa.

Demonstration of a Splint for Fractures of Humerus—Dr. T. VanBoyd, E. St. Louis.

A Report of Two Unusual Cases—Drs. C. O. Lane and C. O. Holoffe, West Frankfort.

Some Points in Gynecological Diagnosis Helpful to the Practitioner—Dr. Otto S. Krebs, St. Louis, Mo.

The Management of Toxemias of Pregnancy—Dr. Frederick H. Falls, Chicago, Ill.

Ringworm of Hand and Feet, Diagnosis and Treatment—Dr. Clinton W. Lane, St. Louis, Mo.

AFTERNOON SESSION

Heart Disease—Its Diagnosis—Robert Berghoff, Chicago, Ill.

Heart Disease—Its Treatment—Dr. O. P. J. Falk, St. Louis, Mo.

The Urologic Complications of Pregnancy—Dr. Justin Cordonnier, E. St. Louis.

The Medical Problem of Dental Caries in Children—Dr. Hugh McCulloch, St. Louis, Mo.

Management of Diseases of the Liver—Dr. Charles A. Elliott, Chicago, Ill.

Fractures with Special Reference to Colles and Pott's Fractures and Fractures of the Hip—lantern slides—Dr. Philip H. Kreuscher, Chicago, Ill.

Business Session and Election of Officers.

Banquet—Speakers:

President's Address—Dr. J. S. Templeton, Pinckneyville.

"Something for Nothing"—Dr. Rolland L. Green, President Illinois State Medical Association.

"Your Medical Society"—Dr. Harold M. Camp, Secretary Illinois State Medical Association.

"Medical Legislation"—Dr. John Neal, Springfield.

Marriages

ARTHUR L. ENNIS, Maroa, Ill., to Miss Bonnie Regan of Decatur, August 21.

Personals

Sangamon County Medical Society at a meeting, November 5, endorsed Dr. Samuel E. Munson as a candidate for the presidency of Illinois State Medical Society.

Dr. Willard Van Hazel, Chicago, addressed the Winnebago County Medical Society in Rockford, October 13, on "Surgery of the Lungs and Pleura."

Dr. Eric Oldberg, Chicago, addressed the Sangamon County Medical Society, Springfield, November 5, on "The Cerebrospinal Fluid."

Dr. Leroy H. Sloan, Chicago, discussed "Differential Diagnosis of Common Causes of Coma" before the Bureau County Medical Society, October 13.

At a meeting of the Chicago Council of Medical Women, November 6, Dr. Marie Ortmayer discussed "Clinical Values of Gastrosocopy."

Among others, Dr. Theodora Wheeler discussed "Carbohydrate Metabolism and the Convulsive Threshold" before the Chicago Neurological Society, November 19.

Dr. George W. Crile, Cleveland, addressed the

North Side Branch of the society, November 5, on "Comparative Anatomy of the Energy Controlling System."

Drs. Ralph A. Reis, Chicago, and Ralph P. Peairs, Normal, discussed gynecology and medical economics, respectively, before the Livingston County Medical Society, November 12.

At a meeting of the Will-Grundy County Medical Society, November 11, Dr. Tell Nelson spoke on the "Management of Bronchial Asthma."

Dr. Joseph Brennemann, Chicago, addressed the Bureau County Medical Society at Princeton, November 10, on "Pneumonia in Childhood."

Dr. John de J. Pemberton, Rochester, Minn., addressed the Peoria City Medical Society, November 10, on surgery of the thyroid gland.

At a meeting of the Kankakee County Medical Society, November 12, Dr. Margarete M. H. Kunde, Chicago, spoke on "Endocrine Therapy in Menstrual Disturbances."

At a meeting of the McDonagh Society for Clinical Research, November 20, Dr. Florimond J. Leblanc spoke on "Pneumonia, Pulmonary Thrombosis and Pulmonary Edema."

Drs. John P. O'Neil and Joseph A. Jerger, both of Chicago, discussed artificial fever therapy before the Kane County Medical Society in Elgin, October 14.

The Carroll County Medical Society was addressed in Savannah, October 13, by Drs. John W. Powers, Milwaukee, and Harry M. Hedge, Chicago, on diseases of the skin and compound fractures respectively.

The Chicago Society of Industrial Medicine and Surgery was addressed, November 23, by Drs. James J. Callahan on "Fractures Around the Elbow Joint" and Edwin M. Miller, "Fractures Around the Elbow Joint in Children."

Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, Tenn., will deliver the thirteenth Ludvig Hektoen Lecture of the Frank Billings Foundation, January 22. His subject will be "Vaccinia."

Among others, Drs. Harry P. Ritchie, St. Paul, and Otto W. Yoerg, Minneapolis, discussed "Another Suggestion in the Technic of Cholecystectomy for the Selected Case" and

"Fracture of Os Calcis" respectively before the Chicago Surgical Society, November 6.

The Chicago Pathological Society was addressed, November 9, by Dr. Paul R. Cannon and George Hartley, Jr., on "The Inadequacy of Allergic Inflammation as Protection Against Infection with Virulent Pneumococci."

The Chicago Pediatric Society was addressed November 17 by Drs. Katsuji Kato, Chicago, and Robert Blessing, Evanston, Ill., on "Sternal Marrow Puncture in Infants and Children" and "The Incidence of Breast Feeding in Private Practice in a Suburban Metropolitan Area"; these were inaugural theses.

Prof. Bernhard Dattner of the University of Vienna addressed the German Medical Society of Chicago, November 3; his subject was "Modern Therapy of Neurosyphilis." Dr. Dattner gave a lecture at Michael Reese Hospital, November 2, on "Nervous Manifestations of Alimentary Hypersensitivity."

The Chicago Orthopaedic Society was addressed, November 13, by Drs. W. Eugene Wolcott, Des Moines, Iowa, on "The Circulation of the Hip with Practical Suggestions Regarding Prognosis in Certain Types of Fractures of the Neck of the Femur" and Frank G. Murphy, "Osteochondritis Dissecans."

At a meeting of the Chicago Gynecological Society, November 20, papers were presented by Drs. William C. Danforth, Evanston, Ill., on "Carcinoma of the Cervix During Pregnancy"; William B. Serbin, "Splenomegaly in Pregnancy," and Julius E. Lackner and Leon Krohn, "Effect of Ovarian Hormones on the Human (Nonpuerperal) Uterus."

On October 21, 1936, Dr. George James Musgrave of Chicago addressed the Christian County Medical Society on "Nasal Sinus Diseases."

News Notes

—Antirabies serum will hereafter be distributed without charge to all persons in need of it. the *Chicago Tribune* reported November 14. Certificates of poverty will no longer be required, it was stated, because the state department of health has placed the serum on the state's free list.

—A public symposium on mental hygiene and

the environment was held at the Hotel Bismarck, November 18, by the Illinois Society for Mental Hygiene, with the following speakers:

W. Lloyd Warner, A. B., assistant professor of anthropology and sociology, University of Chicago, Social Anthropology.

Clifford R. Shaw, M. A., director, department of sociology, Institute for Juvenile Research, Sociology.

Dr. Franz Alexander, director, Institute for Psychoanalysis, Psychoanalysis.

Dr. H. Douglas Singer, director, University of Illinois Psychiatric Institute, Social Psychiatry.

—In the lobby window in the Annex Building of Marshall Field and Company is an exhibit on "feet" designed to show that foot disorders are frequently traced to systemic diseases and emphasizing that the family physician should be consulted before any corrective measures are introduced. Models are displayed to show that a shoe should be made to fit the foot rather than the foot to fit the shoe. There is also a model in plaster of the perfect foot of a child. This window has been given to the Chicago Medical Society, free of rental and service charges, for the display of health educational material. The material is prepared by the educational committee of the Illinois State Medical Society.

—The Rosenwald Fund has given \$100,000 to the American Hospital Association to study and develop voluntary hospital insurance. The program of the association will be projected through a special committee on hospital service with C. Rufus Rorem, Ph. D., as executive director. Other members of the committee are Drs. Basil C. MacLean, Rochester, N. Y., chairman; Sigismund S. Goldwater, New York; Robin C. Buerki, Madison, Wis.; Claude W. Munger, president of the American Hospital Association, and Msgr. Maurice F. Griffin, Cleveland. According to an announcement, one phase of the work will deal with advice and consultation on existing plans and those being formed concerning actuarial data, benefits, method of organization, public relations and annual subscription rates, while a second phase will cover relations of hospital service plans to the medical profession, public welfare activities, state departments of insurance, private insurance companies, hospital administration and hospital accounting.

—At a meeting of the Institute of Medicine of Chicago and the Society of Medical History of Chicago, November 24, the following program was presented:

Dr. Ludvig Hektoen, Notes on the History of Bacteriology in Chicago Prior to the Organization of Bacteriologic Teaching (about 1890).

Dr. George H. Weaver, The Introduction of Bacteriology Into the Medical Curriculum in Chicago.

Dr. Fred O. Tonney, The Introduction of Bacteriology into the Public Health Service in Chicago.

A paper prepared for the Society of Medical History by Dr. Jacques Holinger, before his death in 1934, was read by title: "An Incident in the Development of Antisepsis and Dr. Henry Banga's Part Therein." Dr. Peter Bassoe will deliver the presidential address before the twenty-first annual dinner and meeting of the Institute of Medicine, December 1, on "A Sketch of the Development of Psychiatry and Neurology in Chicago."

—A collection of papers and personal effects of Dr. William Beaumont has been given to the University of Chicago by the physiologist's grandson, Ethan Allen Beaumont, and his wife, of De Pere, Wis. The collection, consisting of first editions, unpublished letters, a case history, surgical instruments, photographs and a chair presented to the Beaumonts by Robert E. Lee, who once lived with them in St. Louis, was on exhibition at the university library, November 20, together with an oil portrait of Dr. Beaumont lent by Mr. A. C. Denny of Evanston. During the exhibition, addresses were delivered by Robert Maynard Hutchins, president of the university, and Drs. Anton J. Carlson, Arno B. Luckhardt and Selim W. McArthur. The program, sponsored by the Friends of the Library of the University of Chicago, was planned to coincide with the one hundred and fifty-first birthday of Dr. Beaumont, November 21.

—The Conference of Illinois Health Officers and Public Health Nurses will be held at the Auditorium, Springfield, December 8-9. The program will include the following speakers:

Dr. Edward G. Huber, instructor in preventive medicine and hygiene, Harvard School of Public Health, Boston, Administrative Functions of a Health Officer.

Philip Jay, D. D. S., University of Michigan School of Dentistry, Ann Arbor, Dental Caries, A Public Health Problem.

Dr. Kenneth F. Maxcy, director, School of Public Health, University of Minnesota, Minneapolis, Administrative Problems in Contagious Disease Control.

Elmer V. McCollum, Ph. D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Diet in Resistance to Disease.

Dr. Raymond A. Vonderlehr, assistant surgeon general, U. S. Public Health Service, Washington, The Problem of Syphilis Control.

Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York, What Next?

At a luncheon for health officers Wednesday, special public health problems in Illinois will be discussed by Dr. Lloyd L. Arnold, professor of bacteriology and public health, University of Illinois College of Medicine, Chicago; Dr. Winston H. Tucker, Springfield, coordinating epidemiologist, state department of public health; Dr. Milton H. Kronenberg, Chicago, medical director, division of industrial hygiene, state department of public health, and W. H. Haskell, milk sanitarian, U. S. Public Health Service.

—A new low cost hospitalization program, known as the "plan for hospital care," has been adopted by the Chicago Hospital Council. Contracts have been sent to Chicago's hospitals. Individuals may become subscribers to the plan, but all subscribers must make application in groups of ten. Each contract is executed individually and not by group, but subscribers may make payments through their companies by payroll deductions or having a company remitting agent. In small firms, where such procedure is not practical, payments will be made either in full at the beginning of the contract or in quarterly remittances. The annual fee is \$9.60. In addition, each subscriber may designate a dependent for whom he may purchase half coverage. After designating the first dependent for an annual fee of \$4.20, the subscriber may for another \$2.20 cover in a group all the other members of his family who qualify as dependents. All contracts become effective ten days after the date of the certificate, except that in case of

accident or emergency illness hospital care will be provided immediately. The contract does not cover pulmonary tuberculosis after diagnosis, or any care provided under the workmen's compensation laws of any state or the United States. If a subscriber requires emergency or accident treatment outside Chicago, his bill is paid to the extent of \$6 a day so long as he selects a hospital which maintains a standard of care and scale of rates satisfactory to the corporation and the Illinois State Department of Public Welfare. Major benefits under this plan include twenty-one days of hospital care covering board and room in semi-private accommodations; general nursing service; operating room and auxiliary services; delivery room and obstetric service for a subscriber in good standing more than twelve months; anesthesia when the services are rendered by salaried employes of the hospital; ordinary drugs, medications and dressings; pathologic and laboratory services, and x-ray examinations when considered necessary by the attending physician. Incorporators of the Hospital Service Corporation, which will carry out the project, include Mr. Charles H. Schweppe, president, St. Luke's Hospital; Dr. Arthur C. Bachmeyer, director of the University of Chicago Clinics; Rev. John W. Barrett, director of Catholic hospitals in Chicago; Dr. Irving S. Cutter, dean, Northwestern University School of Medicine; J. Dewey Lutes, superintendent, Ravenswood Hospital, and Taylor Strawn, president of Grant Hospital.

—At the annual meeting of the Board of Directors of the Mississippi Valley Medical Society held in Quincy November 8, the following officers were elected for 1937:

President-elect, Charles S. Skaggs, M. D., East St. Louis, Ill.

1st Vice-President, Frank G. Ober, M. D., Burlington, Iowa.

2nd Vice-President, M. Pinson Neal, M. D., Columbia, Missouri.

3rd Vice-President, E. C. Kelly, M. D., Peoria, Illinois.

Secretary-Treasurer, Harold Swanberg, M. D., Quincy, Ill. (re-elected).

Honorary membership was conferred on the following:

Frederick H. Falls, M. D., Chicago; Richard H. Jaffe, M. D., Chicago; Raymond Wm. Mc-

Nealy, M. D., Chicago; Donald C. Balfour, M. D., Rochester; Melvin S. Henderson, M. D., Rochester; Ralph Kinsella, M. D., St. Louis; Arthur Joseph Barsky, M. D., New York; George Crile, M. D., Cleveland; Bela Schick, M. D., New York; Alphonse M. Schwitalla, Ph. D., St. Louis.

The 1937 meeting will be held at Quincy, Illinois, September 29, 30, and October 1 (Wednesday, Thursday and Friday).

Deaths

CARL PHILIP BAUER, Chicago; Rush Medical College, Chicago, 1922; a Fellow, A. M. A.; assistant clinical professor of obstetrics and gynecology at his alma mater; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; assistant attending obstetrician and gynecologist to the Presbyterian Hospital; aged 40; died, September 19, of coronary thrombosis.

LEE C. CARDER, Hull, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; aged 83; died, September 5.

DANIEL J. CAREY, Chicago; College of Physicians and Surgeons of Chicago, 1895; aged 61; died, September 24, of cholelithiasis, pneumonia and heart disease.

CLARENCE LIGHT CARLTON, Moline, Ill.; Northwestern University Medical School, Chicago, 1903; a Fellow, A. M. A.; served during the World War; on the staffs of the Lutheran Hospital and the Moline Public Hospital; aged 65; died, September 9, of carcinoma of the colon.

EFFA V. DAVIS, Chicago; Woman's Medical College, Chicago, 1891; a Fellow, A. M. A.; formerly assistant clinical professor of obstetrics at her alma mater and Rush Medical College; owner of the Chicago Maternity Hospital; on the staffs of the Women and Children's Hospital and the American Hospital; past president of the Chicago Council of Medical Women; aged 73; died, October 28.

EDWARD JOSEPH FARRELL, Berwyn, Ill.; Northwestern University Medical School, Chicago, 1907; health officer of Berwyn; aged 53; died, August 9, in the Berwyn Hospital.

ALBERT WILLIAM FELTMAN, Chicago; Jenner Medical College, Chicago, 1896; aged 72; died, September 3, of myocarditis and chronic nephritis.

CHARLES LEONARD FERRIS, Carthage, Ill.; Rush Medical College, Chicago, 1878; aged 82; died, August 9, of chronic myocarditis.

ROBERT LINCOLN FINLEY, Du Quoin, Ill.; Hering Medical College, Chicago, 1912; aged 49; died August 18, at Thebes, of arteriosclerosis.

GILBERT FITZ-PATRICK, Chicago, a Fellow A. M. A.; chairman of the professional committee for medicine,

Illinois Department of Registration and Education, died suddenly November 12, aged 63, of coronary thrombosis and chronic myocarditis. Dr. Fitz-Patrick was born in Salem, Ohio, Jan. 19, 1873. He attended the Ohio Northern University in Ada and received his M. D. degrees from the Chicago Homeopathic Medical College in 1896 and the Harvey Medical College, Chicago, in 1899. He was formerly head of the department of obstetrics at the Hahnemann Medical College and Hospital, Chicago. During the World War he was chief of surgery in a base hospital at Camp Gordon, Atlanta, Ga., colonel in the medical reserve corps of the U. S. Army. In 1927 he was a delegate of the Association of Military Surgeons to the Royal Institute of Public Health in Belgium and the following year was a delegate to the first International Congress of Public Health and Hygiene at Cairo, Egypt. He was past president of the Illinois section of the American Society for the Control of Cancer and of the North Side branch of the Chicago Medical Society, and a fellow and governor of the American College of Surgeons. Dr. Fitz-Patrick was attending obstetrician to the Cook County Hospital and the Henrotin Hospital, consulting obstetrician and trustee of the Illinois Masonic Hospital, and member of the visiting staff of the Passavant Hospital.

EDWARD NEWTON FLINT, Chicago; College of Physicians and Surgeons of Chicago, 1887; aged 72; died, August 31, at the Ravenswood Hospital, of myocarditis.

WILLIAM KARG GRAY, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; a Fellow, A. M. A.; formerly assistant professor of otolaryngology at the Loyola University School of Medicine; for many years on the staff of St. Anne's Hospital; aged 58; died, September 11, at his home in Oak Park, Ill.

WILLIAM FRANCIS HAGER, Pana, Ill.; Barnes Medical College, St. Louis, 1908 and 1909; a Fellow, A. M. A.; on the staff of the Huber Memorial Hospital; aged 55; died, August 10, of coronary thrombosis.

JAMES ARTHUR SULLIVAN HOWELL, Elgin, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1891; served during the World War; aged 65; died, August 18, in St. Joseph's Hospital, of carcinoma of the prostate.

WILLIAM HENRY JAMIESON, Ottawa, Ill.; Rush Medical College, Chicago, 1910; a Fellow, A. M. A.; president of the medical staff of the Ryburn Memorial Hospital; formerly on the staff of the Ottawa Tuberculosis Sanatorium; member of the school board; aged 59; died, August 9, in the State of Wisconsin General Hospital, Madison, of coronary thrombosis.

PHILIP C. W. JOHANNES, Chicago; Northwestern University Medical School, Chicago, 1900; clinical assistant in genito-urinary surgery at his alma mater, 1904-1906; member of the Illinois State Medical Society; served during the World War; member of the staffs of the Illinois Masonic Hospital and the Evangelical Hospital of Chicago; aged 60; died, September

8, in St. Margaret's Hospital, Hammond, of injuries received in an automobile collision.

AUGUSTUS M. JOHNSON, Arzenville, Ill.; St. Louis College of Physicians and Surgeons, 1898; aged 61; died, August 14, in a hospital at Beardstown, of multiple cerebral infarcts.

ALBERT BELCHAM KEYES, Chicago; Chicago Medical College, 1890; formerly assistant professor of obstetrics and gynecology, Rush Medical College, and professor of gynecology at the Chicago Policlinic; fellow of the American College of Surgeons; served during the World War; gynecologist to the Henrotin Hospital and the Chicago Maternity Hospital; aged 74; died, October 11, at his home in Evanston, Ill., of cerebral thrombosis.

OTIS HARDY MACLAY, Chicago; Northwestern University Medical School, Chicago, 1901; a Fellow, A. M. A.; member of the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; past president of the Chicago Laryngological, Rhinological and Otolological Society; assistant professor of otolaryngology at his alma mater; on the staff of the Wesley Memorial Hospital; aged 63; died, September 5, of coronary thrombosis.

NIELS VICTOR MIKKELSEN, Park Ridge, Ill.; Chicago College of Medicine and Surgery, 1910; on the staff of the Lutheran Deaconess Hospital, Chicago; aged 56; died, August 24.

JOSEPH E. SCHALLMO, Chicago; Loyola University School of Medicine, Chicago, 1916; aged 62; died, August 5, of chronic myocarditis.

ARTHUR C. SELLS, Aledo, Ill.; Keokuk (Iowa) Medical College, 1892; member of the Illinois State Medical Society; aged 65; died, July 10.

LOUIS J. SINTZEL, Northbrook, Ill.; St. Louis College of Physicians and Surgeons, 1899; for many years health officer of the village of Northbrook; attending physician to St. Anne's Home, Techny; aged 71; died, August 5, of carcinoma of the bladder.

C. LAMBERT TOWNSEND, Joliet, Ill.; Chicago Medical School, 1922; aged 52; died, July 15, in St. Joseph's Hospital.

ERNEST PAYNE VAN ARSDALL, Danville, Ill.; Loyola University School of Medicine, Chicago, 1916; past president and secretary of the Cass County Medical Society; aged 48; died, August 14, at the Lakeview Hospital, following a herniotomy.

GEORGE F. WASHBURNE, Glen Ellyn, Ill.; Chicago Homeopathic Medical College, 1885; formerly health officer for the board of health of Chicago; at one time physician in charge of the Spring Hill Sanitarium, Hastings-on-the-Hudson, N. Y.; aged 81; died, August 12, of arteriosclerosis.

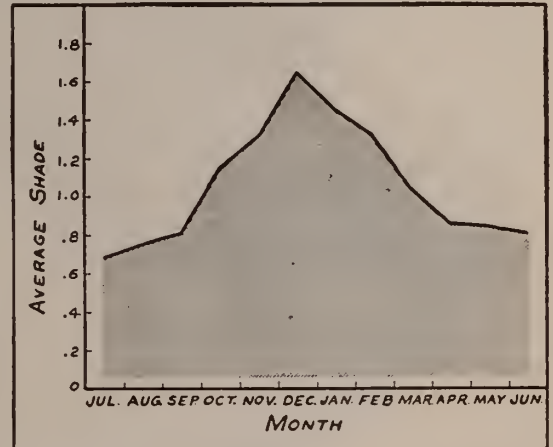
HARRY PERCIVAL WOLEY, Chicago; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890; a Fellow A. M. A.; for many years connected with the New York Life Insurance Company; aged 72; died, August 12, in a hospital at Evanston, Ill.

WEATHER FORECAST— HEAVY SMOKEFALL

SMOKE exerts a definite influence on the weather at this season by reducing the amount of sunlight. Beginning in September there is a steady rise in atmospheric pollution until in December it becomes double that of midsummer, according to a recent report of a two-year study made by the U. S. Public Health Service in ten of the largest American cities, representing a population of millions. One of the most surprising findings was that there is no decrease in the dust content of the air either during or after a rain.

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ALLERGIC DISEASES—THEIR DIAGNOSIS AND TREATMENT. By Ray M. Balyeat, M. D. Illustrated with 132 engravings, including 8 in colors. Fourth Edition revised and enlarged. Philadelphia. F. A. Davis Company. 1936. Price, \$6.00.

In this fourth edition many old chapters have been completely rewritten, and there has been added new chapters on the more recent phases of allergy. Much space has been given allergic dermatology and gastrointestinal allergy.

In this edition the author has discussed the various subjects in a practical manner, offering case reports as a means of teaching methods of diagnosis and treatment.

Book Reviews

A HEALTH EDUCATION WORKBOOK. By Kathleen Wilkinson Wootten, M. A. New York. A. S. Barnes & Company. 1936. Price, \$1.50.

This work is intended for teachers, parents, nurses and social workers. It fills a long felt want along the lines indicated.

EUGENICAL STERILIZATION. By the Committee of the American Neurological Association for the Investigation of Eugenical Sterilization. The Macmillan Company. New York. 1936. Price \$3.00.

This committee has studied the principle literature of the world on the subject assigned to it by the American Neurological Association and have embodied their findings in this work.



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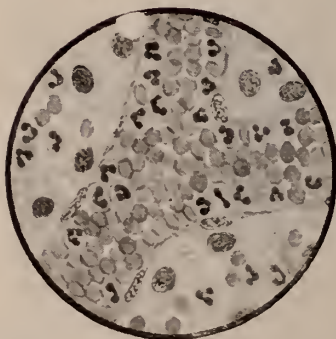
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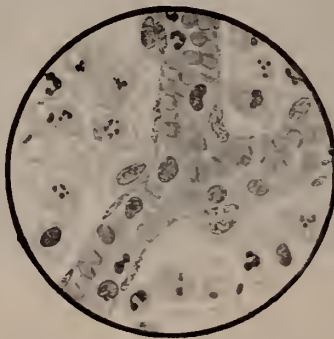
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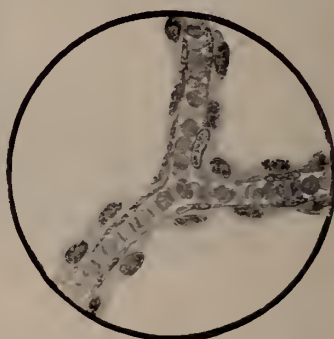
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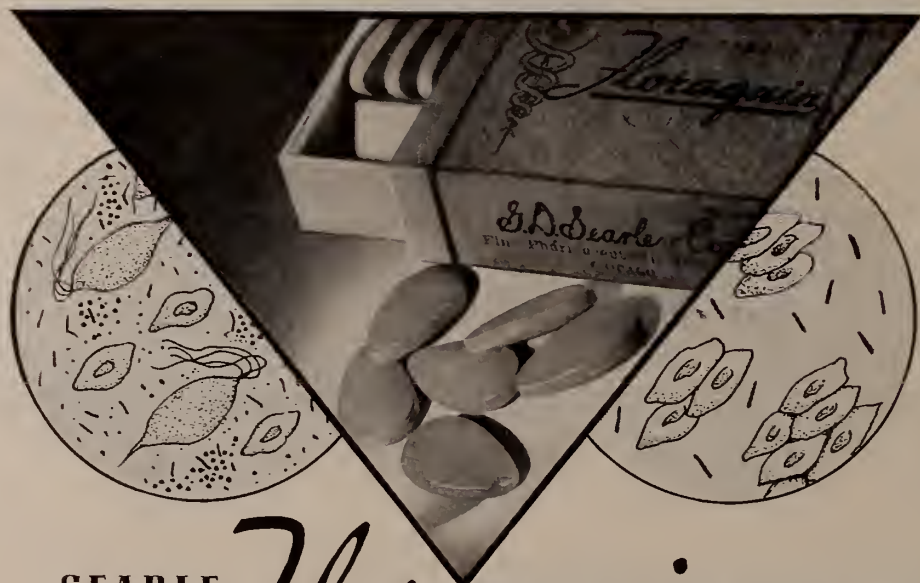
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